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MEDICINE IN NEW AMSTERDAM

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The discovery and exploration of New York began in 1524 when Giovanni Da Verranzzano, an Italian serving the King of France, entered the magnificent harbor in the ship " Dauphine." He visited the upper and lower bays but did not reach *Manhatin*—the island of little hills. The following year Estevan Gomez, a Portuguese pilot in the service of Spain, sailed along the North Atlantic coast and noted the inlets but it is not at all probable that he entered New York Bay. The voyage of Gomez influenced the map makers of his century, but the primeval land remained undisturbed for eighty-four years save for the presence of the Algonquin Indians.

The third voyage of Master Henry Hudson in 1609 started the train of events which led to the founding of New York and its development from a tiny trading post to a great city. The bold English navigator hired by the Dutch East India Company in Holland to seek a passage to China attempted first a Northeast passage but turned back because of ice and cold. He then sailed to the coast of America at about the fortieth degree of latitude seeking a northwest passage, influenced by certain letters and maps which his friend Captain John Smith had sent him from Virginia.

Hudson sailed his little yacht the *Halve Maene* or Half Moon up the Great River of the Mountains for about one hundred and fifty miles in a vain search for a passage from the Atlantic to the land of

spices, passing through a country " fair to look upon and inhabited by red men peacefully inclined." Only a few weeks before Samuel de Champlain had engaged in a great fight with the Iroquois on Lake Champlain while far to the south Captain John Smith was spending the last seven weeks of his administration as President of Virginia.

Hudson's voyage called the attention of the Dutch to the prospects of a lucrative fur trade in the new territory he had discovered. Soon a constant stream of vessels with such quaint names as Fortune, Tiger, Little Fox, Nightingale and Spotted Cow were crossing the Atlantic, ascending the great river and returning to Holland laden with the skins of the beaver, the otter, the lynx and the mink.

For many years the Dutch were busy trafficking in furs and made no attempt at settlement. Even when the twelve year truce with Spain ended in 1621 and the Dutch West India Company was established, the primary purpose was plundering the Spanish Argosies and fur trading although the charter stipulated that the company might " advance the peopling of those fruitful and unsettled parts."

While the date of settlement of New Netherlands cannot be determined with absolute certainty it is probable that the first settlement within the confines of the present Empire State of New York was made by the Dutch West India Company at Fort Orange now Albany in 1624. In the spring of that year some thirty families mostly Walloons or French speaking Belgians arrived in the ship New Netherland under the command of Cornelius Jacobsen May of Hoorn, the first Director General. When skipper May returned to Holland at the end of the year he reported that everything was in good condition, and that the little colony " began to advance bravely and to live in friendship with the natives." [1]

Prior to emigrating this first little group of settlers took the oath of allegiance on March 30, 1624, before Dr. Claes Petersz and Gharrard Schaep. Dr. Claes Petersz was the well known physician Dr. Nicholas Pieterson Tulp, the central figure in Rembrandt's famous painting called *The Lesson in Anatomy*, which hangs in the Mauritshuis at The Hague. " Tulp " was a nickname, derived from the tulp or tulip, which was placed over his front door.[2]

[1] J. Franklin Jameson, *Narratives of New Netherland*, New York, 1909, 78.

[2] A. J. F. van Laer, *Documents relating to New Netherland, 1624-26, in the Henry E. Huntington Library*, San Marino, Calif., 1924, 256.

Fig. 1.

An Early View of New Amsterdam.

(Courtesy of the New York Public Library)

There was no physician, surgeon or midwife as far as we know, in this first settlement. The first people to look after the ill in New Netherland were consolers or visitors of the sick.

On November 14, 1624, Sebastian Jansen Krol who had been in New Netherland during the summer appeared before the Consistory of the Reformed Church in Holland and reported on conditions that he had found in the colony. He informed the brethern " that there were pregnant women among the settlers; that someone should be given authority to baptize their babies; and that the people there asked for a preacher."

Brother Krol sailed with Willem Verhulst, second Director of New Netherland, on the *Orange Tree* in 1625. In the instructions issued for Verhulst it was ordered: " First, he shall take care that divine service be held at the proper times both on board ship and on land, enable the comforter of the sick, Sebastian Janssz Crol, to perform his duties in conformity with the authorization and instructions given him by the Consistory, maintain him in proper respect, and see that the community there is properly served by him in the ministration of holy baptism, in reading sermons, offering prayers, and in visiting the sick, and that the Indians be instructed in the Christian religion out of God's Holy Word." [3]

Comforters of the sick were of two classes known as krankenbezoeker and ziekentrooster, the former meaning a seeker out or visitor of the sick, especially those overtaken suddenly by sickness; while the latter meant a comforter of those who were very sick, especially when nearing their end. Practically the two terms were used synonymously.[4]

The arrival of the comforters of the sick marks the beginning of the healing art here as clerical or priestly medicine, an evolution which took place in a similar manner the world over. Consolers were recruited generally from the humble ranks of society. Carpenters, bakers, shoemakers, hodcarriers, soldiers and tailors applied for the job. Krol was a caffawerker or plush or velours worker by trade and a man of apparently little formal education for at the time of

[3] A. J. F. van Laer, *op. cit.*, 36.
[4] *Ecclesiastical Records of the State of New York*, Albany, 1901.

his marriage in March 1615 he was unable to write, making a cross for his signature in the betrothal book.[5]

Krol's career as a consoler of the sick soon ended for on August 1, 1626, he was appointed commissary at Fort Orange because according to de Rasiere he was well acquainted with the Indian language. This scarcely seems possible for the Reverend Johannes

Fig. 2.

New Amsterdam about 1630

Megapolensis who wrote an account of the Mohawk Indians in 1644 and was anxious to explain to them the advantage of becoming Christians, was quite provoked because he could get no assistance from Krol in attempting to learn the Indian language for Krol after twenty years of contact with the natives imagined that they changed their language every two or three years.[6]

Most of the time until March 1632 Krol acted as chief agent for the company at Fort Orange (Albany) and while there was instru-

[5] I. N. Phelps Stokes, *Iconography of New York*, New York, 1916-28, IV: 54.
[6] J. F. Jameson, *op. cit.*, 173.

mental in purchasing the domain of Rensselaerswyck for its patroon in 1630. After the departure of Minuit, Krol acted as Director General of the New Netherland from 1632 until the arrival of Van Twiller. Perhaps his chief claim to a grateful place in our memory is the tradition that the cruller, crolyer or Krolyer, was so-called in his honor.[7]

The arrival of Peter Minuit in 1626 marks the first permanent settlement on Manhattan and the founding of New Amsterdam.[8] Jan Huych, the brother-in-law of Minuit was comforter of the sick and officiated as clergyman until New York's first minister, the Reverend Jonas Michaelius arrived in 1628. Apparently there were as yet few sick to console for from that time on Huych acted as storekeeper for the company.[9]

The ships which came to the New Netherland to trade usually had a barber-surgeon on board who was competent to bleed and perform minor operations. Ship surgeons were usually birds of passage leaving no record on the pages of history. Jan Pryce, barber-surgeon was in the service of the West India Company as early as July, 1623. On November 6, 1626, shortly after his return to Holland with skipper Adriaen Jorisz Thienpont, he sought a settlement of his accounts. He had brought back a chest of peltries which he had earned by surgically bleeding the Indians but Willem Verhulst had unjustly obtained possession of the furs.[10]

The year the patroon system was established, in 1630, Surgeon Harmen Meydertsz van den Bogaert arrived on the ship Eendracht or Unity in company with a group of colonists bound for Rensselaerswyck.[11] Also on the passenger list was " Tryn " or Catherine Jonas, the official midwife accompanied by her two daughters Annetje and Marytje.

Bogaert served as surgeon of the West India Company for many years being stationed most of the time at Fort Orange. He was the author of a *Narrative of a Journey into the Mohawk and Oneida*

[7] W. E. Griffis, *The Story of New Netherland*, New York, 1909, 75.

[8] Victor Hugo Paltsits, *Proceedings of the American Antiquarian Society*, N. S., 34, 1924, 53.

[9] I. N. Phelps Stokes, *op. cit.*, IV : 66.

[10] *Ibid.*, IV : 67.

[11] *Records of New Netherland* (*O'Callaghan's Trans.*), New York, 1897, I : 195.

Country, the first description of the life of the Iroquois by any man who had travelled among them.[12] The surgeon with two companions journeyed into the Mohawk country in the middle of the winter of 1634-1635, to outbid the French for the beaver skins of the Oneidas and the Mohawks. At Oneida Town on January 4th, he was invited to witness how the Indians drove out the devil. Entering a bark long house he found a dozen men mostly old, their faces streaked with red paint, gathered around a desperately ill Indian. An old woman beat with a rattle to the measure of which all chanted. The Dutch surgeon sat in the midst of the howling, dancing savages for some time, wondering at "such foolery." But when the Indians began throwing fire, scattering hot ashes and red-hot coals, he promptly departed.

The surgeon noted that smallpox raged in the villages of the League of the Iroquois. This is probably the earliest reference to its appearance on the Eastern seaboard, although this loathsome disease appeared in the Western hemisphere soon after the landing of the first European immigrants.

Indian medicine was not all hocus pocus for Bogaert noted that the Iroquois used sulphur to treat many maladies "but principally for their legs when they were sore from long marching." [13]

In 1639, Bogaert made a voyage to the West Indies as super cargo of the ship "Canary Bird." He had apparently left the employ of the company for on March 22, 1640, he sought to collect from the directors at Amsterdam "all such wages and board money" as he earned in the West India Company's service from March 21, 1630, to February 1, 1633.[14]

Bogaert was related either directly or by marriage to Cloes Smits, the wheelwright who was killed by an Indian in 1642, for in the summer of that year he sold to two Englishmen, James Smith and William Brown his interest as "co-heir" in the plantation of the murdered man near Turtle Bay.

In 1643, the surgeon was back at Rensselaerswyck where he was instrumental in saving the life of Father Jogues, the missionary, who

[12] J. F. Jameson, *op. cit.*, 138.
[13] *Ibid.*, 141, 143.
[14] I. N. Phelps Stokes, *op. cit.*, IV: 92.

had long been held captive by the Indians. Hearing that the Indians were preparing to kill him Father Jogues escaped during the night but while fleeing was bitten in the leg by a dog. If surgeon Bogaert had not put his hand to it he would "have lost not only the leg but life; for gangrene was already setting in." [15]

Fig. 3.

"Montanye's Fonteyn" as still to be seen flowing into Harlem Mere, Central Park.

(From DeForest's *A Walloon Family in America.*)

In 1645, Bogaert was living on "the road" later called Brouwer Street, on a plot of between fifty or sixty feet front for which he finally obtained his "ground-brief" in the early part of 1647. He was apparently well to do at this time for he purchased a share in the privateering frigate "La Garce" under the command of Captain Blauvelt.

[15] J. F. Jameson, *op. cit.*, 252.

The surgeon did not live to collect any of the prize money for he soon came to a tragic end. At Albany, in the winter of 1647-48, he was accused of a criminal offence of a grave nature and took refuge in the Mohawk Country among the Indians with whom he had become well acquainted in the course of his official duties at Fort Orange. A party was sent out by the Magistrates to arrest the surgeon but he made a determined resistance and during the fray the Indian cabin was set on fire either accidentally or by design and he perished in the flames. The Indians demanded to be reimbursed for the destruction of their lodge so in February 1648, the Director and the Council ordered a part of Bogaert's garden upon Stone Street in New Amsterdam to be sold for the purpose of indemnifying the Indians.[16]

The second surgeon to settle in New Amsterdam was Hans Kierstede a German from Magdeburg who probably fled after the terrible sacking of that place by Count Tilly's cruel soldiers in the year 1631. We find him as early as 1638 the official surgeon in New Amsterdam for the West India Company. Gerrit Schutt was also a regularly bred surgeon in the employ of the Company at this time.[17]

Peter van der Linde arrived in New Amsterdam on the ship *Love* in 1638. A claim by him dated September 17, 1639, for surgeon's fees is on file at Albany. In 1640, he was an inspector of tobacco and in 1648, was a temporary teacher of the first school in New Amsterdam and clerk of the church.[18]

On April 10, 1640, Jan Pietersen van Essendelft, a ship's surgeon in the employ of the West India Company, being sick abed " at his house in Fort Amsterdam," made a will, and devised that " all the surgical instruments belonging to him " should go, at his death to Master Hans Kierstede, the New Amsterdam surgeon.[19]

Jan Pietersen was the first surgeon in the employ of the Dutch on the Delaware where he served two years. He was preceded by a barber surgeon, Hanns Janeke who accompanied the first Swedish expedition.[20]

[16] J. H. Innes, *New Amsterdam and Its People*, New York, 1902, 11, 68, 71.
[17] *Ibid.*, 45 *et seq.*
[18] *Ecclesiastical Records of the State of New York*, Albany, 1901.
[19] *Records of New Netherland* (*O'Callaghan's Trans.*), New York, 1897, I: 199.
[20] Samuel X. Radbill, The Barber Surgeons among the Early Dutch and Swedes

Surgeons were in great demand at this time. In 1650, Secretary Van Tienhoven wrote that " A surgeon provided with medicines was required to accompany farmers to New Netherland.[21] Stuyvesant and the council addressed a letter to the directors at New Amsterdam on October 30, 1655, pointing out that Surgeon-barbers were needed for Curacao, Delaware River and other places.[22]

Captain Cregier at the Esopus, having asked for surgical assistance from Stuyvesant and the council on August 27, 1663, was answered: " We understand the necessity of a good surgeon perfectly well, but you know as we, how difficult it is to obtain one; Master (Kierstede) is a burgher (of New Amsterdam) and besides cannot be spared here without detriment to the whole place and all the inhabitants. You and we know what the other two are. We see for the present no better expedient, than that the sick and wounded, whom the sawbones there (Wiltwijck) can neither help nor cure, be sent down by every chance." [23]

The first educated physician as distinguished from a surgeon to arrive in New Amsterdam was Dr. Johannes la Montagne, a graduate of Leyden, who came over on the Rensselaerwyck in 1637.

Very soon after his arrival the learned Dr. Montagne as he was now called became a prominent figure in the colony. New York was only eleven years old and consisted merely of a few small log huts, thatched with straw, clustered around a fort on a little tip of land at the south end of the island, south of Wall Street within a space embraced by the present Bowling Green, Whitehall, Bridge and State Streets.

Dr. Montagne served as a member of the provincial council under William Kieft and under Peter Stuyvesant. He was finally made Vice-Director at Fort Orange.

There is little evidence that Dr. Montagne practiced his profession in the midst of his many other activities although it has been stated

along the Delaware, *Bulletin of the History of Medicine*, Vol. IV, No. 9, November, 1936, p. 724.

[21] *Documents Relative to the Colonial History of the State of New York*, Albany, 1856-61, I: 361.

[22] I. N. Phelps Stokes, *op. cit.*, IV: 161.

[23] *Documents Relative to the Colonial History of the State of New York*, Albany, 1877-83, XIII: 292.

that he was the only member of the profession in whom the settlers had any confidence. Apparently he was the court of last appeal in matters involving the medical fraternity, as the following incident illustrates. The surgeons of the colony who considered themselves entitled to the exclusive right to practice on shore, also desired to include in this practice the art of shaving. The barber-surgeons of ships visiting the port also claimed the right to practice in the town while their ships were lying in the harbor. The surgeons asserted that the ship's barbers had committed a number of mistakes in treatment due to inexperience while on shore although there was no reflection cast on their proficiency with the razor. The surgeons petitioned the Directors to forbid these intruders from shaving people on shore and as a result in 1652 the first ordinance regulating the practice of medicine was passed:

"On the petition of the Chirurgeons of New Amsterdam, that none but they alone be allowed to shave; the Director and Council understand that shaving doth not appertain exclusively to chirurgery, but is an appendix thereto; that no man can be prevented operating on himself, nor to do another the friendly act, provided it is through courtesy and not for gain, which is hereby forbidden. It is further ordered that ship barbers shall not be allowed to dress any wounds nor administer any potions on shore without the previous knowledge and special consent of the petitioners, or at least of Dr. Montagne." [24]

The names of the petitioning surgeons were:

Jan Croon,
Van der Bogaert,
Aldart Swartout,
Hans Kierstede,
Jacob Hendrickson Varrevanger
Jacob Hughes.

The Netherlands during the seventeenth century was the intellectual center of Europe and it is therefore not surprising that there was a certain amount of scientific curiosity about the Dutch colony in the new world. In the instructions issued for Willem Verhulst

[24] *Documents Relative to the Colonial History of the State of New York*, Albany, 1877-83, XIV: 155-156.

in 1625, it was ordered that: "He shall have Pierre Minuyt and others whom he shall deem fit investigate what minerals and crystals there may be both on the North River and on the South River, and to that end have the mountains in which such are supposed to be inspected all around, causing holes to be dug, first at the foot, then halfway up, and finally at the top of the mountains in order to see what they contain, sending us samples of each mineral that looks promising, and likewise of dyes, drugs, gums, herbs, plants, trees, and flowers." [25]

Nicolaes van Wassenaer in the "Historisch Verhael," in 1624 noted concerning the Indians that, "In some places they have abundant means, with herbs and leaves or roots, to cure their ailments. There is not an ailment they have not a remedy for; but in other localities they are altogether devoid of succor, leaving the people to perish like cattle." [26]

Johan de Laet wrote in the "New World," in 1633, "there is a great variety of herbaceous plants, some of which bear splendid flowers and others are considered valuable for their medicinal properties." [27]

In the Representation of New Netherland, 1650, we read: "The medicinal plants found in New Netherland up to the present time, by little search, as far as they have come to our knowledge, consist principally of Venus' hair, hart's tongue, lingwort, polypody, white mullein, priest's shoe, garden and seabeach orach, water germander, tower-mustard, sweet flag, sassafras, crowfoot, plantain, shepherd's purse, mallows, wild majoram, crane's bill, marsh-mallows, false eglantine, laurel, violet, blue flag, wild indigo, solomon's seal, dragon's blood, comfrey, milfoil, many sorts of fern, wild lilies of different kinds, agrimony, wild leek, blessed thistle, snakeroot, Spanish figs which grow out of the leaves, tarragon and numerous other plants and flowers; but as we are not skilled in those things, we cannot say much of them; yet it is not to be doubted that experts would be able to find many simples of great and different virtues, in which we have confidence, principally because the Indians know how

[25] A. J. F. van Laer, *op. cit.*, 75.
[26] J. F. Jameson, *op. cit.*, 72.
[27] *Ibid.*, 54.

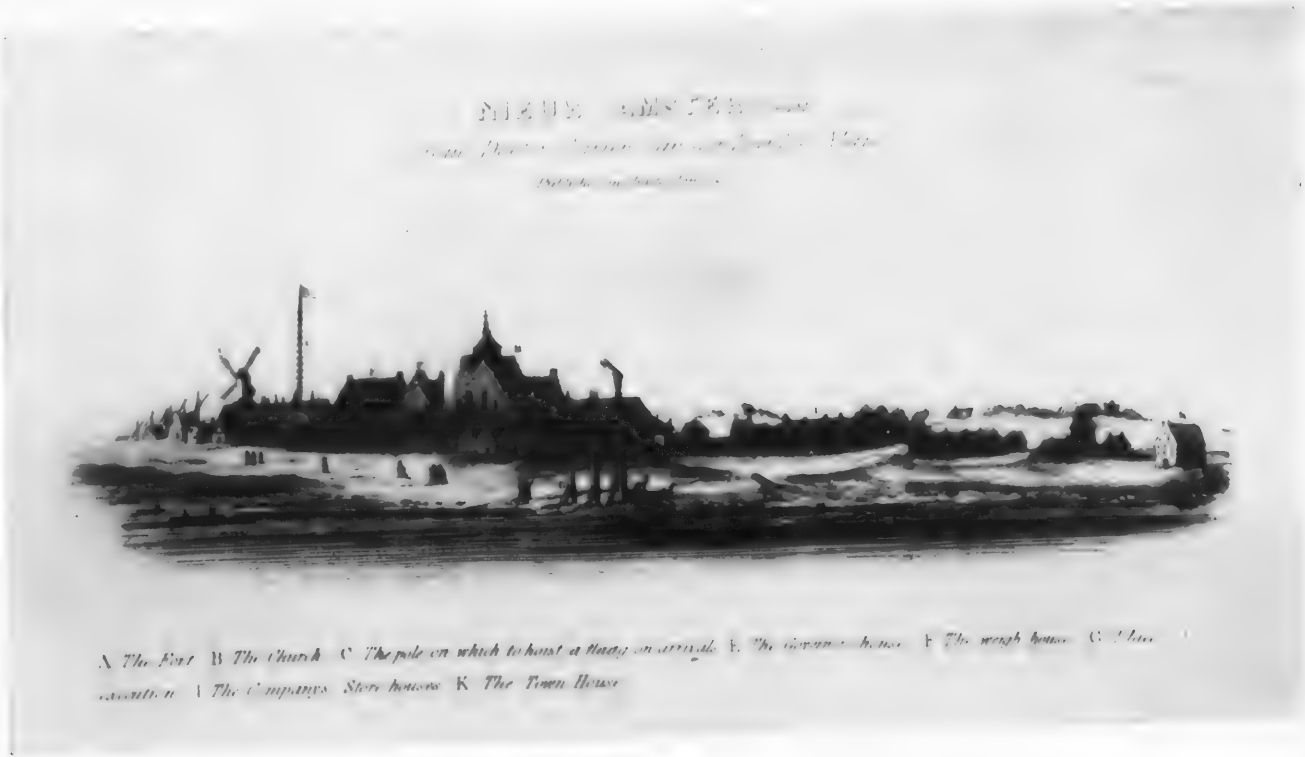
A The Fort B The Church C The pole on which to hoist a flagg on arrivals E The
F The weigh house
I The Companys Store houses K The Town House

Fig. 4.

View of New Amsterdam, 1656.

to cure very dangerous and perilous wounds and sores by roots, leaves and other little things." [28]

In the "Description of New Netherland," 1655, Adriaen van der Donck wrote:

"No reasonable person will doubt that there are many medicinal and healing plants in the New Netherlands. A certain chirurgeon, who was also a botanist, had a beautiful garden there, wherein a great variety of medicinal wild plants were collected, but the owner has removed and the garden lies neglected. Because sickness does not prevail much, I suppose the subject has received less attention. The plants which are known to us are the following: Capilli veneris, scholopendria, angelica, polypodium, verbascum album, calteus sacerdotis, atriplex hortensis and marina, chortium, turrites, calamus aromaticus, sassafras, rois Virginianum, ranunculus, plantago, bursa pastoris, malva, origaenum, geranicum, althea, cinoroton pseudo, daphine, viola, ireas, indigo silvestris, sigillum salamonis, sanguis, draconum, consolidae, millefolium, noli me tangere, cardo benedictus, agrimonium, serpentariae, coriander, leeks, wild leeks, Spanish figs, elatine, camperfolie, petum male and female, and many other plants. The land is full of different kinds of herbs and trees besides those enumerated, among which there undoubtedly are good *simplicia*, with which discreet persons would do much good; for we know that the Indians with roots, bulbs, leaves, etc., cure dangerous wounds and old sores, of which we have seen many instances."

The settlers coming to the new world suffered considerably from sickness during the long voyage in the tiny sailing ships. Some idea of the difficulties of the passage may be obtained from the following document from Vice-Director Alrichs to the Commander of the Colony on the Delaware River dated New Amstel, October 10, 1658:

"William van Rasenberg, who came over as Surgeon, puts forth sundry claims against people whom he attended on the passage, inasmuch as his wages did not run at the time and on the voyage, and he used his own provisions. There were on board the ship considerable sickness, accidents, and hardship in consequence of a tedious voyage. One hundred souls required at least a hogshead or two of French wine and one of brandy, and a tub of prunes had also to be

[28] J. F. Jameson, *op. cit.*, 298.

furnished for refreshment and comfort of those sick of scurvy and suffering from other troubles, through the protracted voyage; for from want thereof, the people became so low that death followed, which is a pretty serious matter. Here, on shore, I see clearly that the poor, weak, sick, or indigent, sometimes have need necessarily of this and that to support them, which one cannot easily or will not, refuse; though it be sometimes but a spoonful, frequently repeated, it amounts to more than is supposed." [29]

De Sille wrote of New Netherland in 1654, "this country is good and healthy,—the people are seldom sick." In August of the following year, however, both Governor Stuyvesant and Dr. Montagne were seized with illness during "a general epidemic" which possibly followed the importation of the first cargo of negro slaves directly into New Amsterdam.

In 1659, Governor Stuyvesant proclaimed September 30th as a day of general fasting and prayer because of an epidemic during "this summer" of a "painful and long, lingering sickness," and the "devastating Indian war" at the Esopus and other parts of the province.[30]

There is only one reference to venereal disease in the Dutch colony. In 1648 according to Gerrit van Sweeringen's account the Dutch and Swedes on the Delaware "got the pox from the Indian women" while trading on a small branch of the river. The branch was designated thereafter as "the whore-kill" and the traders forbidden to trade there.[31] There is no evidence that syphilis existed among the Indians of the eastern seaboard prior to the arrival of Europeans.

The long struggle of the plain people of New Amsterdam for some measure of home rule culminated in 1649 when the last of the Dutch governors, the tyrannical and bigoted Peter Stuyvesant ruled with an iron hand. Eleven present or former members of the board of Nine Men representing the people remonstrated to the home government about the conditions of affairs. Christians were treated like Indians in their purchase of necessities. A thousand ways were sought to

[29] *Documents Relative to the Colonial History of the State of New York*, Albany, 1856-61, II: 55.

[30] I. N. Phelps Stokes, *op. cit.*, I: 54; IV: 199, 200.

[31] *Documents Relative to the Colonial History of the State of New York*, Albany, 1856-61, VIII: 342.

shear the sheep before the wool had grown. The poor had nothing except what was collected in the church and the Deacons borrowed that for their own use.

The lack of a hospital and similar institutions in which seventeenth century towns in Holland abounded, aroused indignation. It was pointed out that, "There is occasionally, a flying report of an hospital and of asylums for orphans and for old men but as yet not a sign of an attempt, order or regulation has been made about them."

Their High Mightinesses, the Lords States General of the United Netherland and the privileged West India Company answered that, "The Company's circumstances admitted of building neither of an hospital nor orphan asylum, which are not very necessary there as yet."

Incensed by the remonstrances of the people made directly to the States General, the directors of the West India Company in a private communication to Stuyvesant characterized them as "silly people—at least the majority of them—who have been badly misled by a few seditious persons who seem to leave nothing untried to upset every kind of government—pretending that they suffered under too heavy a yoke."[32]

The first institutions established in colonial America to shelter the sick poor were almshouses similar in function to xenodochia built in the old world during the medieval period for sick and infirm pilgrims. The earliest almshouse in New Netherland was built by the Dutch Reformed Church at Rensselaerswyck prior to 1652. In New Amsterdam the first almshouse was erected in 1652 at the present 21-23 Beaver Street. This was replaced by a second house at what is now 34 Broad Street; when this had become dilapidated it was supplanted by a third poor house at 37 Wall Street in 1701. Food was obtained from a poor farm or Arme Bowerie located at what is now North Beach in Queens County, which had been presented to the Dutch Reformed Church of New Amsterdam by one Deacon Frawley about 1650.

On December 12, 1658, surgeon Jacob Hendrickson Varrevanger

[32] *Ecclesiastical Records of the State of New York*, Albany, 1901, I: 252, 267. See also *Documents Relative to the Colonial History of the State of New York*, Albany, 1856-61, I: 300, 334.

petitioned the Provincial Council that a hospital be established for sick soldiers who had been billeted on private families. "He was sorry to learn that such sick people must suffer much through cold, inconveniencies and the untidyness of the people who had taken the poor fellows into their houses where bad smells and filth counteract all health-producing effects of the medicaments given by him the surgeon. Death had been the result of it in several cases and many deaths will follow." Facilities were needed also for the sick negro slaves owned by the Company. Varrevanger suggested that the negroes should be attended at the expense of the Company but the soldiers were to pay out of their pay and rations. A decade before the authorities had ignored the representations of the commonaltry as to the need of similar institutions but slaves and soldiers were valuable. Accordingly the surgeon was directed to look about for a suitable location and for a steward or nurse and then report to the council.[33]

Hillatje Wilbruch, a midwife, was appointed as matron of the proposed hospital on the twenty-third of the month at a yearly salary of 100 florins. Opened prior to July 1660, the hospital was located in the Five Houses which were five stone buildings erected about 1630 on the east side of Winckel Straet. They had been used for many years as the workshop of the carpenter, blacksmith, cooper, armorer and others in the employ of the company. In the rear was the goat house erected in Director Van Twiller's time. The old hospital as it became known was "pulled downe" by order of Governor Andros in 1680, after it had become unserviceable.[34]

With the gradual rise of the burgher class and the granting of municipal government in 1653 there was some opportunity for the surgeons to engage in private practice although the town had only 700 or 800 inhabitants. The surgeons often acted as agents for the company or engaged in trade and various other kinds of business like the other burghers. Thus, Abraham Staets, surgeon, who came to Rensselaerwyck in 1642, with Domine Megapolensis and became one of the Council, was a large trader in furs with New Amsterdam,

[33] I. N. Phelps Stokes, *op. cit.*, IV: 193.

[34] *Documents Relative to the Colonial History of the State of New York*, Albany, 1856-61, III: 307, 312.

besides pursuing his profession. For many years he was a skipper on the North River, commanding a sloop plying between New York and Albany.[35]

Paulus van der Beeck who had served as surgeon in Curacoa on board the Company's ships, finally settled in Brooklyn and in 1662 rented the ferry to Brooklyn. A year later he was warned by the authorities to be more attentive to the wants of travelers, as complaint has been made that they are often made to wait half a day and night, before they are carried across the river.

The surgeons often had trouble collecting their fees. On June 22, 1660, Harmen Wessels sued William Bredenbent for thirty florins in zeewan (wampum) or twenty florins in beaver, or fifteen florins in silver money, for curing a sore in Mrs. Bredenbent's shoulder, and said that defendant allowed him only six guilders in zeewan. William pleaded that it was quite enough, as he could hire the doctor a whole year for twelve guilders. The case was referred to Messrs. Kierstede and Varrevanger for arbitration.

Dr. Henry Taylor (1672) recovered one hundred and fourteen florins wampum from Egbert Mynders, on Dr. Jacob Varrevanger's award. The doctor was an irascible person for in 1673, Else Manning complained that her master, Dr. Henry Taylor, " hath assaulted en battered hur in the fease " and claimed eighty florins for wages due. The Schout prosecuted the doctor and wanted him fined " 100 fl. above the smart and surgeon's fee, with costs, for he had struck hin late maid on the head so that the blood ran out her nose and she lay blind the whole 24 hours." The doctor admitted having struck one blow in haste and had to pay the eighty florins as well as twenty-five florins and costs. Two weeks later, Dr. Harmen Wessels recovered twenty-five florins and costs from his brother surgeon " for curing his maid and for her board and drink."

Frequently the surgeons accepted payment in goods. On October 31, 1656, Aldart Swartwout demanded delivery of a kettle promised for curing Jacob Scheltinger's leg. The latter admitted the promise but not the cure. Both parties acknowledged to have agreed to a perfect cure or no pay, so the matter was referred to Mr. Hans

[35] A. J. F. van Laer, Ed., *Van Rensselaer Bowier Manuscripts*, Albany, 1908, 828.

Kierstede and Mr. Jacob Varrevanger, "both old and experienced surgeons," to investigate and report.[36]

Obstetrics in New Netherland was entirely in the hands of midwives. The father of modern midwifery Hendrick van Deventer was not born until 1651 and his *Novum Lumen* did not appear until 1701.

The names of several of the early Dutch midwives had come down to us. During Van Twiller's administration in 1635, Fort Amsterdam was finished and outside the fort he had a small house erected for the midwife along with a new bakery and a goat house behind the five large stone houses of the company. On November 26, 1635, the chamber of Amsterdam received "a letter from Tryntgen Jonas (or Jansen), midwife in New Netherland, requesting an increase in wages and some necessaries." In a deposition dated July, 1644, Tryntje Jonas was still listed "midwife of New Netherlands." On an official list of the employees of the West India Company in New Netherland, dated January, 1650, the midwife received 100 guilders per annum. Hellegond Joris, who was appointed city midwife of New Amsterdam in 1655 was granted an annual salary of 100 guilders for her services in attending the poor by Stuyvesant and the council on May 11, 1660. At Esopus in 1655, Mrs. Cornelis Barentsen Slecht was the midwife.[37]

Medicine in New Amsterdam as the somewhat sparse records reveal was conditioned by the limitations of a little frontier trading post. The "golden age" in the mother country had no effect on medicine in the new world. The influence of the great medical center at Leyden on New York medicine came long after the province passed from the control of the Dutch and was exerted indirectly by way of Edinburgh and London.

[36] Esther Singleton, *Dutch New York*, New York, 1909, 244.

[37] I. N. Phelps Stokes, *op. cit.*, IV, 17, 83, 102, 206; E. B. O'Callaghan, The *Register of New Netherland*, Albany, 1865, 128.

GIUSEPPE ZAMBECCARI

A Seventeenth-Century Pioneer in Experimental Physiology and Surgery *

SAUL JARCHO, M.D.

The present studies had their origin in the laboratories of pathology at the College of Physicians and Surgeons. Two years ago Dr. Dorothy Andersen and I started to investigate certain end results of splenic trauma and of splenectomy, and especially the spontaneous autotransplantation of splenic tissue (1). The experimental aspects of the problem are still under active investigation but do not fall within the limits of this discussion.

When the *literature* of splenectomy came under surveillance one name was found recurring in article after article. This was the name of Giuseppe Zambeccari, who was said to have performed experimental splenectomy as early as the year 1680. It was obvious on inspection that most of the modern references to Zambeccari were made at second or third hand, often through Morgagni. Thus a recent monograph on the spleen (2) contains this statement:

> In 1680 Zambeccari observed in the mesentery of a dog four months after splenectomy numerous newly formed nodules isolated or collected in groups, yellow in color and resembling lymphatic glands.

The footnote to the foregoing passage is as follows (3):

> Zambeccari: Experimente intorno le diverse viscere tagliate a diversi animali viventi. Florence 1680.—quoted by Morgagni: Animadvers. Anatom. ii, Observ. XXIV.

With regard to this reference, which is typical of recent literature on the subject, I would call attention to the following details:

(1) The reference is given not as a first-hand citation, but as a quotation from Morgagni.

* From the Department of Pathology, College of Physicians and Surgeons, Columbia University, New York, N. Y. (Delivered in part before Section of Historical and Cultural Medicine of New York Academy of Medicine, May 8, 1940.)

(2) Morgagni's book is actually named ADVERSARIA ANATOMICA, not ANIMADVERSIONES ANATOMICAE.

(3) Zambeccari's first name or initial are not given in the footnote—evidence that the original had not been consulted.

(4) The word "Experimente" is an incorrect rendering of "Esperienze."

The same curious errors occur in at least three other modern articles on the spleen and obviously come from a common and incorrect source.

Implicit in these bibliographic minutiae is an interesting historical problem. An Italian scientist, Giuseppe Zambeccari, is widely mentioned as having done important early experimental work, yet this work apparently had not been consulted by those who so often mentioned it. Every indication of this kind suggested that persistent search in the proper directions would bring to light a mass of significant and valuable material and might illuminate the status of experimental medicine as it existed in an earlier era. The results have far exceeded expectation.

It is hardly necessary to recount the methods by which the life and work of Zambeccari were exhumed and resurrected. The studies are still not quite complete, and I shall merely report on what has been brought to light thus far.

For those American readers who may wish to undertake research in seventeenth century Italian medicine it is not irrelevant to state that the work is beset by numerous difficulties. Even the modern Italian medical literature is only moderately well represented in American libraries; *a fortiori*, the numerous short-lived non-medical journals and reviews are especially difficult of access to those who are on this side of the Atlantic. The same is true of the minor authors and bibliographers of previous centuries, so that in some instances extraordinary efforts are necessary for one who wishes to obtain even simple fragments of information. All of the printed works of Zambeccari are rare books; much of his work, moreover, has never been printed, but remains to this day in the form of unpublished manuscripts. Arrangements are now being made with the Biblioteca Nazionale Centrale and the Mediceo-Laurentian Library at Florence, which it is hoped will grant permission to publish certain

of the manuscripts. There are also a few letters—in private collections and in provincial libraries—which will probably be of interest. The major treatises are now being translated into English for the first time and will be prepared for publication.

Giuseppe Zambeccari was born on March 19, 1655, at Castelfranco di Sotto, near Florence. According to Ferrari, (4) on whom I have drawn freely for biographical data, local archivists have traced the family back to the fifteenth century, and have found physicians, lawyers, and clergymen in various degrees of consanguinity. There is slight evidence of kinship with the noble Zambeccari family of Bologna—a relation which Giuseppe Zambeccari repeatedly and successfully strove to confirm by official recognition. The Zambeccari family of Bologna, it may be added, is now extinct.

When Giuseppe Zambeccari was 18 years of age, he made application to enter the Ducal College at Pisa on a scholarship. The letter of application is still in existence (4). It was acted upon favorably and the young man began his studies in 1673 at what is now the University of Pisa.

It is instructive to consider what was in the intellectual atmosphere of Pisa at this time. We are fortunate in being able to evaluate the traditions of the time and the place very definitely.

The traditions of Pisa were those of Malpighi, Cesalpino, Fallopius, Vesalius, Galileo, Realdo Colombo, Borelli, and Bellini. All these men had engaged in original investigations. They left behind them a large body of more or less exact data, obtained under difficult conditions, by crude and direct methods of observation. Their findings were often in conflict with the hallowed opinions of the ancients and repeatedly provoked the resistance of the social order. The school at Pisa, for example, was under steady fire from the Jesuits for a long time.

By and large the observations collected by Malpighi, Vesalius, Galileo and the others have stood up well under the unceasing scrutiny of subsequent generations and their writings are now our valued classics.

In the special case of Galileo it is easy to establish, as I hope to do later, a very clear influence on Zambeccari. This has been misinterpreted as a personal influence, but it must be remembered that

Galileo had died 30 years before the time which we are now considering.

Among those who actually instructed Zambeccari at Pisa the most influential was his professor of anatomy, Lorenzo Bellini, whose fundamental researches on the kidney are still of interest (5).

After taking his doctor's degree at Pisa in 1679 Zambeccari went to Florence to work with the illustrious Francesco Redi.

The polypractic Redi was brilliant and versatile enough to draw scholars from farther afield than Pisa. His home was virtually a private graduate school of medicine, zoology, and poetry. A naturalist, physician, medical consultant, experimentalist, poet, philologist, and courtier, Redi appears to have been also a singularly gracious and stimulating person. This is evident especially from his numerous letters and is discernible also in certain of his sonnets. A fair sample of Redi's point of view is found in the following remark from his " Observations on Vipers " (6) :

> " Every day I become firmer in my intention to give no faith to anything in nature except what I see with my own eyes and have confirmed by repeated and reiterated experiment."

This is followed by an appropriate quotation from Dante describing how sheep follow one another unthinkingly.

Zambeccari completed his clinical training by work done under Redi at the Ospedale di Santa Maria Nuova at Florence. It would be desirable to know more about the duties of the apprentice and master at this establishment. Presumably the younger man obtained the approximate equivalent of a modern internship.

It was at the home of Redi, in the year 1680, that Zambeccari's earliest and most important work was done. In accordance with the custom of the period the results were published in the form of a letter. This was entitled (7) :

> Experiments of Doctor Joseph Zambeccari concerning the excision of various organs from divers living animals. Written by him and dedicated to the most illustrious Master Francesco Redi. Florence 1680.

The twenty-nine pages of this treatise contain an amazing series of experimental operations on the spleen, kidney, liver, omentum, gall bladder, pancreas, mesenteric veins, caecum, and on the eye.

Fig. 1

The Ospedale di S. Maria Nuova at Florence.

In this institution Zambeccari studied clinical medicine under the tutelage of Redi at the time that the experiments were performed. (*Photo: Alinari*)

A few brief excerpts will illustrate the general nature of the work:

"Most Illustrious Sir:

That the spleen can be cut out of the bodies of various animals without their dying or becoming unhealthy is a fact well known even to beginners in Anatomy and Medicine. . . . Celius Aurelianus however, . . . considered the operation a myth. The famous John Riolanus . . . likewise regarded it as a myth. If Riolanus had not been willing to rely on conjectures supplied by his own opinions, if he had taken counsel with Experience, the true mistress of all things, he would have been able to recognize his own error. . . . I have often handled the spleen in various dogs, male and female, young and old, and as Your Excellency knows, I have excised the spleen at various times in the presence of many . . . friends. . . . Not one of the dogs died or became sick, except two . . . which remained with a hernia of the omentum. . . .

"Now, since I have learned with certainty that animals can live without a spleen, I could wish to . . . know with equal certainty what function the spleen subserves . . . being inspired by that which I read on the subject in the works of our incomparable Galileo."

At this point there is a quotation from Galileo's Dialogue on Two Great Systems (59). I shall take the liberty of giving this in extenso:

"I should consider it a great piece of arrogance or even folly," said Galileo, "for anyone to say that because I do not know of what use Jupiter and Saturn are, these planets are superfluous. . . . I do not even know the functions of the arteries . . . the spleen or the bile, nor indeed would I even know that I have a spleen or bile or kidneys if these things had not been shown me in numerous dissections. I shall be able to understand the working of my spleen only when someone shall have excised it."

In this passage Galileo's mention of the spleen is clearly nothing more than incidental and too much importance should not be ascribed to it. As will be shown later, however, the influence of Galileo on Zambeccari was great, though indirect.

Having established beyond doubt that the spleen is not essential for life, Zambeccari and his collaborators attempted to find out what anatomical alterations, if any, were produced by splenectomy. Very much in the modern manner three splenectomized dogs were put to death—or as we would say, were "sacrificed"—from three to six months after the operation. In one of these dogs it was found that "a certain minute yellow efflorescence, almost like a gland, had

formed here and there in groups and spots in the mesentery and in the . . . intestine." These efflorescences were probably either lymphoid nodules or splenic implants (1).

The series of splenectomies yielded no definite conclusion as to the function of the spleen. The investigators then decided to study other organs by the same crude method.

> "After these experiments on removal of the spleen had been brought to a successful conclusion, Your Excellency . . . encouraged me and my companions to . . . remove various organs from animals in order to see what good or bad result might follow. I courageously embarked upon this exactly in the same way as the discoverers of the New World, who . . . first entrusted themselves to the sea, without knowing . . . what they were doing and where they were going. However, I did not have their good luck. Instead, I fared as did those who looked for the Terra Australis Incognita and never reached it. Although they did not attain their objective, nevertheless they left for posterity an account of their voyages which may be useful in time to come."

The subsequent experiments—all performed within less than one year—constitute an almost complete elementary course in the experimental physiology and surgery of the abdominal organs.

In a series of eight unilateral nephrectomies in dogs, there were four deaths, one wound infection with recovery and three uncomplicated recoveries. No mention is made of the adrenal gland, which had been discovered more than 100 years previously by Eustachius (8).

The next group of experiments was directed to the biliary apparatus. In a preliminary operation it was found possible to ligate and divide the neck of the gall bladder without detriment to the animal. In the next operation part of the liver was excised, after which the gall bladder was exposed and removed. This animal also survived. On a third dog simple cholecystectomy proved fatal in 5 days. These three experiments were sufficient to demolish the opinion of Franciscus Sylvius (9), who held that bile is made in the cystic vessels and flows upward toward the liver as well as downward toward the intestine.

Other abdominal operations performed by Zambeccari and collaborators included excision of lobes of the liver, excision of the caecum, resection of the caecum, pancreatectomy and ligation of

mesenteric veins. The latter operations, as might be expected, were in general unsuccessful.

Another series of studies concerned regeneration of the aqueous humor of the eye. This work had an interesting background of classical pseudoscientific lore. Aristotle (10, 11), Pliny (12, 13), Dioscorides (14), and Tertullian (15) had stated that swallows when wounded in the eye are accustomed to cure themselves by applying the herb celandine to the site of injury. Celsus (16) had advised treating ocular injuries with the blood of pigeons or swallows

> "since their eyes return to normal some time after having suffered an external injury; and this is most rapid in the case of the swallow. Wherefore the fable has arisen that they are restored . . . by the herb celandine, whereas they really get well by themselves."

Perhaps because of this dictum of Celsus applications of avian blood constituted an accepted remedy for wounds of the eye. Benvenuto Cellini (17), for example, records in his Autobiography that he was treated successfully by this method.

This body of ophthalmologic tradition had been attacked by Redi (18), who punctured the corneae of pigeons, chickens, geese, ducks, and turkeys, and had found that the aqueous humor is restored in less than 24 hours. Zambeccari and his friends performed the same operation successfully in mammals and completed the destruction of the old belief.

These simple and impressive experiments were performed by a man twenty-five years of age and in his first year as a doctor. He was inspired by Redi, an investigative genius, and was aided by three collaborators. These men were Bernardino Ciarpaglini of Pratovecchio, Stefano Bonucci of Arezzo and Ippolito Neri of Empoli.

Of the three Ippolito Neri (19, 20) was the most famous. He was born at Empoli in 1652, the son of Lorenzo Neri, a well-known professor of logic and medicine at Pisa and Padua. Ippolito Neri received the medical doctorate at Pisa in 1675, then worked under Redi at the Ospedale di S. Maria Nuova. Late in life he became personal physician to Grand Duke Ferdinand. He died in 1708. Neri's fame rests chiefly on his poems (21) and especially on a posthumous mock-heroic composition, La Presa di San Miniato. Also extant are a letter from Redi to Neri, dated 1687 (22), and Neri's reply (23).

Of Ciarpaglini the only trace which I have been able to detect consists of a letter of Redi (24) inscribed to one Sig. Dott. Ciarpaglini, Medico di Volterra, and dated June 9, 1685.

Concerning the third collaborator, Stefano Bonucci, I have equally little to report. Salvini (25) refers to him as a gentleman of Arezzo associated with Redi. The Biblioteca Guarnacci at Volterra is said by Mazzatinti (26) to possess a collection of letters written by and to Antonmaria Bonucci during the years 1713 and 1714. The aid of the librarian at Volterra is being enlisted in an attempt to search these letters for relevant material.

In the charming fashion of bygone times the three collaborators are referred to repeatedly as the author's " friends " and the contribution of each is recorded precisely. Ciarpaglini performed one of the splenectomies and two operations on the liver. Bonucci performed a cholecystectomy. Neri took part in the experiments on the eye.

Concerning the surgical technique of Zambeccari and his friends little need be said at this point, inasmuch as the entire treatise, newly translated into English, will soon be ready for publication. An additional excerpt may be preferable to a long discussion.

" Therefore on the first day of June of the current year, 1680, I took a dog, tied it to a table, and carefully shaved the skin over the left side of the lower abdomen. At a distance of four fingerbreadths below the false ribs I cut into the skin, then into the muscles. When I reached the membrane known as the Peritoneum, within which the intestines and other viscera of the lower abdomen are situated, I cut it as carefully as possible so as not to injure the intestines. The latter contingency would have occurred very readily had I not elected to make the first opening in the peritoneum at the moment when the dog was exhaling; at this time the ascending diaphragm could not press upon the organs contained in the abdomen and the latter were not so close to the peritoneum. Having made the first cut I introduced a finger, raised up the membrane and without difficulty enlarged the incision to the extent of five fingerbreadths. Immediately all the intestines escaped through the opening, an occurrence which greatly hindered the operation. At last, placing my hand at the site of the kidney I separated it from the fatty membrane, which held it so firmly that it could scarcely be brought to the edges of the incision. After I had separated the kidney from this membrane I without difficulty brought it out of the abdomen and then had no trouble in ligating the ureter after which I cut it above the ligature and toward the kidney. Then with a single ligature I tightly tied the artery and vein en masse,

together with all the vessels which enter the kidney in a group. Then I cut the kidney away and removed it. Immediately after this I replaced the intestines in order.

With a soft sponge and cold water I washed the edges of the wound and then approximated them with a double thread, taking care to close the peritoneum at the same time."

The results of the entire series of investigations were, first, definite and abundant proof that the spleen is not necessary for life; second, proof that the kidney is likewise removable; third, proof that bile does not flow upward; fourth, evidence that the aqueous humor regenerates completely and rapidly in mammals.

Not long after the completion of these experiments Zambeccari returned to Pisa, where he succeeded Giuseppe Del Papa as lecturer in practical medicine. In 1680 he became professor ordinarius of medicine. Fifteen years later, in 1704, he succeeded Lorenzo Bellini as professor of anatomy. The latter post he held until his death, December 13, 1728 (4, 27). In accord with his wish he was buried in the church of S. Eufrasia at Pisa (28).

According to information generously supplied by the Rt. Rev. Monsignor Alberto Cipollini of the Archepiscopate of Pisa (29) and by Cav. Achille de Rubertis (30), Director of the R. Archivio di Stato at Pisa, the church of S. Eufrasia is still in existence. In 1729, the year following Zambeccari's death, the church passed into the hands of the Carmelitani Scalzi, who rebuilt certain parts of the structure and made a new pavement; the tombstones were either removed or, more likely, covered. There is thus no remaining vestige of Zambeccari's burial place, nor does the church of S. Eufrasia or its principal S. Sisto possess any record of the burial.

Contrary to what has been thought, the experiments of Zambeccari did not lapse into immediate obscurity. Apparently it has escaped the notice of previous students that the Experiments passed through at least five editions during the lifetime of the author.

The original publication, in Italian, appeared in 1680 (7). In 1685 a Latin translation was issued by Le Clerc and Mangetus in the collection known as the Bibliotheca Anatomica (31). The date of this edition is cited incorrectly by several authors (32, 33, 34, 35, 36, 37). The place of publication also has been cited incorrectly (38) by a leading historian.

Fig. 2

The church of S. Eufrasia at Pisa.
In this church Zambeccari is buried.

(*Photograph prepared by special arrangement with Alinari and Co., Florence*)

In 1699 Le Clerc and Mangetus republished the Bibliotheca Anatomica and once more included the work of Zambeccari (39). This edition, the second to appear in Latin, thus really represents the third edition of Zambeccari's treatise. It is one of the most widely quoted in modern times and appears to have been regarded by some scholars as the first or only edition.

From a vague hint included in a remark by Carlo Fedeli (40) it can be inferred that another edition of Mangetus' Bibliotheca Anatomica was published at Rome under the superintendence of Lancisi. Fedeli specifies that the Lancisi edition did not contain the essay by Zambeccari. If this edition is extant I have been able to find no trace of it up to the present time.

One other version of the Bibliotheca Anatomica has come to light during the present researches. This is the book published in English by John Nutt of London (41), in three volumes dated 1711 to 1714. This work represents an extensive recasting of certain materials taken from Le Clerc and Manget's 1699 edition; much has been omitted, much rewritten, and much added. In a careful perusal of the London volumes I have been unable to find Zambeccari's treatise, or any excerpts therefrom.

A new translation of Zambeccari's Experiments was made by Lanzoni and published in the Ephemerides of the Caesareo-Leopoldine Academy (42). The main text of the Ephemerides was issued at Leipzig and Frankfurt, but the appendix, which includes the essay of Zambeccari, bears a Nuremberg title-page and the date 1697.

Another edition, of great interest, was put forth by Sancassani in 1731 (43). Sancassani appears to have been an almost fanatical believer in the curative powers of nature and the curative virtues of water; he was an equally fanatical opponent of the use of salves and antiseptics. He recognized that most of the wounds in Zambeccari's experimental animals had healed with no other antiseptic treatment than simple ablution. Accordingly he seized on the text of the Experiments and republished it with a long commentary of his own. This edition, the fifth in Zambeccari's lifetime, has eluded the notice of all commentators except the indefatigable Albrecht von Haller (44). It is worthy of incidental mention that Sancassani prefaced

his text of the Experiments with a letter which he had written to Zambeccari, and with Zambeccari's interesting reply, dated at Pisa, June 1, 1724.

The extensiveness of Zambeccari's reputation is proved not only by the five aforementioned editions of his Experiments but also by an extensive series of significant contemporary references.

The earliest of these is a letter written by Redi (45) to Zambeccari in 1689, concerning Zambeccari's appointment to a lectureship at Pisa. In this letter Redi mentions Zambeccari's goodness and the exemplary purity of his habits; these were traits which Redi had had ample opportunity to notice during the apprenticeship of 1678 and 1680. Additional references to Zambeccari occur at several places in the correspondence of Redi (46).

Other scientists who knew Zambeccari well were his colleagues Michelangelo Tilli the botanist, Giuseppe Averani the jurisconsult, Pascasio Giannetti the professor of medicine, and Marzio Venturini the lawyer. According to Ferrari (47) Venturini spoke of Zambeccari as " a very learned man and wise physician, worthy successor of the famous Bellini in the chair of anatomy " (48). Ferrari also states (49) that the archives of the Venturini family at Pontremoli contain material referring to Zambeccari.

Giuseppe Averani is known to have been another close friend of Zambeccari (50). This friendship was held together by scientific zeal and also by religious tendencies which evidently were prominent in both men. It is therefore probable that a diligent search of extant literary remains of Averani would yield useful information regarding his friend.

Pascasio Giannetti is responsible for the statement that Zambeccari had dissected at least thirty thousand cadavers (51, 52). Up to the present writing I have been unable to find Giannetti's original statement.

It is on record that this entire group of learned men—Tilli, Averani, Giannetti, Zambeccari, and also Guido Grandi the mathematician and Luca Albizzi the philosopher—collaborated in experiments on a model of Boyle's pneumatic machine which Anna Luigia dei Medici had presented to the University of Pisa (53). The writings of this group of men would therefore constitute a proper

objective of future studies. Four letters written to Guido Grandi by Zambeccari are preserved in the R. Bibliotheca Universitaria di Pisa (54). These were dated August 10, 1699; October 9, 1700; June 13, 1712; and June 24, 1712 (55). It is hoped that the library at Pisa will grant permission for the publication and translation of these letters.

Interesting minor references are those of Goelicke and Fantonus (57). These, together with the aforementioned publication in the Ephemerides (42) prove that Zambeccari was well known in Germany. Fantonus discussed the possibility of caecal resection in the human, in view of Zambeccari's experiments on animals. Somewhat quaintly he concludes:

> Sed haec in homine experimenta, cui non semper eadem cum brutis sors est, tam plena horroris sunt, ut ea tentare minime liceret, nisi de summa re ageretur.

It is to be regretted that the practical fruition of these ideas did not come until almost 200 years later. It is of incidental interest that in his discussion of the spleen Fantonus (58) makes use of the same quotation from Galileo (59) as was employed by Zambeccari. This passage had evidently become a sort of locus classicus for students of the spleen.

Another important contemporary notice of Zambeccari is contained in the book of Bartolomeo Corte (60). This book is now very rare and I thank the directors of the Harvard College Library for making their copy available to me. Corte says that Zambeccari, Averani and others, aided by the Grand Duke of Tuscany, used the burning glass in order to study the properties of various precious and semi-precious stones. They also studied moonlight by means of lenses and thermometers, and concluded that it did not produce heat. In addition Corte was informed by Zambeccari in direct conversation, of certain (apparently unpublished) anatomical works. In view of the scarcity of Corte's book I herewith summarize his list of these lost works of Zambeccari:

> The highly esteemed conversation of the aforementioned Giuseppe Zambeccari (famous Professor of Anatomy at the University of Pisa, and a man of ineffable erudition) which I enjoyed during his stay in this city, and the courteous communication of his precious writings, which he made to me,

make it possible for me to give the following list of his observations and discoveries:

The course of lymph between skin and cuticula—Studies of the membrana carnosa, the human fourth integument—Universal history of muscles, including those of the spine—The human physiognomy and the facial musculature—The maxillary antra—The formation of teeth—The muscles of the cubital region—The cervical vertebrae—The anatomy of the hip—The knee—The foot and its resemblance to a tripod—The structure of the cerebral cortex, corpus callosum, fornix, and crura, and their vasculature—The pineal gland is not a pure gland but a third cerebellum—The structure of the pia, dura, and olivary bodies—Nerve plexuses of the thorax and abdomen—A special ferment made in the lungs, and called "a universal ferment of the blood"—Singular functions of the larynx—Special muscles of the vena cava and pulmonary veins—Muscle fibres in the mitral and tricuspid valves—The true function of the auricles of the heart—The circulation of the pericardial fluid—The function of the left axillary artery—Miscellaneous studies of the abdominal viscera—The site of blood formation in the fetus.

It is almost inconceivable that so large a collection of writings should have perished completely. Not only are the writings lost, but their very existence was forgotten after the time of Mangetus (61) and Haller (44) and they were never again referred to in the literature until the article of Calamida (66).

The list which I have taken from Corte affords no indication as to the size of any of these pieces of work, nor can we infer whether they were arranged as chapters of one volume or as separate volumes. The titles clearly illustrate Zambeccari's predominantly morphological interest, yet there is also abundant evidence of attention to physiology, as in "the true function of the auricles of the heart," and in "Singular functions of the larynx." It is just however to surmise that these physiological studies were speculative rather than experimental.

The material collected by Corte was summarized by the omniscient Mangetus (61) in an article on Zambeccari in the Bibliotheca Scriptorum Medicorum Veterum et Recentiorum. This article was quite evidently written near the end of Zambeccari's lifetime but was not published until after Zambeccari's death. It refers to him as "medicus famigeratissimus, qui nunc, scilicet sub finem anni 1726 adhucdum vivit, Anatomicum Professoratum, maxima cum laude. Pisis a 46 annis exercens."

That Zambeccari carried out certain crude chemical investigations

on body fluids is evident from a passage in Lorenzo Bellini's Motus Cordis intra et extra uterum (62), which was copied by Pacchioni (63). Zambeccari is said to have found that spinal fluid evaporates completely when heated, and does not produce a coagulum. It is doubtful if these experiments on spinal fluid were ever published. They however suggest that Zambeccari's investigations covered a wider field than might otherwise have been suspected.

Zambeccari's long tenure of the professorship of anatomy at Pisa gave him many opportunities for observation of pathological conditions such as would fall within the scope of a professor of pathology at the present time. As previously stated, Giannetti had estimated the total of Zambeccari's dissections as more than 30,000. That such a mass of material should have yielded its due quota of unusual specimens is not surprising, and the famous Antonio Vallisneri (64) has preserved a description of a double monstrosity dissected by Zambeccari and crudely illustrated by an unknown hand. Vallisneri elsewhere mentions a trifling personal contact with Zambeccari (65). A letter from Zambeccari to Vallisneri is included in the unpublished collection owned by Professor Calamida (66) of Milan. This letter is said to contain a description of the air at Pisa, and its possible beneficial effect on a distinguished tuberculous patient Don Filippo Gonzaga, Prince of Novellara, who had applied to Vallisneri for advice. The writings of Vallisneri include a description of a case of tuberculosis occurring in a nobleman, who may have been the Prince of Novellara (67), and Vallisneri elsewhere specifically mentions an autopsy performed on this personage (68).

To the distinguished list of savants mentioned in the foregoing paragraphs, one very great name must be added—that of the illustrious Morgagni, who, like Bellini, Pacchioni, Vallisneri and the others, expressed his esteem for Zambeccari by numerous quotations. These concern the experiments on the spleen (69), kidney (70), intestine (71), and eye (72).

In view of the foregoing considerations it is not to be wondered at that Zambeccari is mentioned repeatedly by the transcendental eighteenth century medical bibliographer and physiologist Albrecht von Haller, since Haller was probably the greatest bibliographic authority of this period. In a survey, necessarily incomplete, of

accessible writings by Haller, I have found no less than ten references to the Experiments of Zambeccari (44, 73, 74, 75, 76, 77, 78).

Just as Haller marks the end of a bibliographic era, so in analogous fashion Angelo Fabroni represents a landmark in the biographical studies which form a necessary part of the present essay. Fabroni's Historia Academiae Pisanae, published in three ample volumes (1791-1795), constitutes a principal source of data concerning the life work and character of Zambeccari and his professional associates. The clarity and importance of Fabroni's testimony justify quotation (79):

> Dum adhuc in vivis erat Bellinius, coepit anatomia tractare Josephus Zambeccarius Pontremulensis, qui an 1681 ad nos venerat ordinarius practicae medicinae praeceptor . . . Cum anno vero 1704 successisset in Bellinii locum, tenuit hunc ad annum usque 1729, quo naturae concessit. Fecit quidem sedulo, ut tanti viri desiderium leniretur, utque consilio et opera prodesset auditoribus suis. Neque tam homines in eo suspiciebant physicarum rerum doctrinam summam, quam *singularem morum bonitatem*, quibus nominibus laudatus etiam fuit a Francisco Redio (45) (Epistolae I, p. 221; Florence 1779). Cum primum docere coepit anatomen, eam rationem inivit, ut aliorum inventa illustriora ob oculos poneret, *indicaretque quae superessent ad miram noscendam corporis humani fabricam. Qua re fiebat, ut non modo ab se dimitteret discipulos suos ab omni eruditione instructissimos, sed etiam cupidissimos novi aliquid investigandi* (80) (italics mine).

The last two sentences of the foregoing quotation depict an ideal teacher, who energetically transmitted knowledge and also assiduously implanted the love of research. In the twentieth century, an age which has regularly encouraged, lauded and subsidized the research worker while it has relegated the pedagogic art to a rank of neglected inferiority, we would do well to re-examine the better rounded ideals of earlier times, such as are clearly portrayed in Fabroni's detailed delineation of Zambeccari.

As was stated in previous sections of this essay, the writings of Fabroni and Haller together mark the end of an era in the study of the life and works of Zambeccari. At the close of the eighteenth century the fame of Redi's distinguished pupil went into sudden eclipse for a period of seventy-five years. A few perfunctory and derivative references are included in the compilations of Poggiali (81), Bartolomeo Gamba da Bassano (82), and Gerini (83); and

several imperfect but appreciative notices will be found in the five volumes of De Renzi (84); but the fame of Zambeccari remained in occultation until the year 1873, when Augusto Murri (85) published his studies on the formation of urea in the kidney.

Murri says: "The work (of Zambeccari) was unknown to me until a year ago. At that time during a conversation with my good friend Dr. Bicchi (86) on the subject of splenectomy he—a man learned in science and in letters—inspired me to read Zambeccari. In this way I also learned of the latter's experiments on the kidney. I have desired to recall the notice at this point in order to render due credit to our predecessors for their part in the progress of our science. Such notice is most timely today, since Simon of Heidelberg, encouraged by similar experiments, has for the first time succeeded in extirpating the kidney in a living human."

From the work of Murri the diligent or leisurely bibliographer can trace the increasing appreciation of Zambeccari by the Italian surgeons Ceccherelli (87, 88, 89), Loreta (94, 91), Dandolo (92), and Alessandri (93, 94, 95), also in the extensive writings of Langenbuch (96, 97) and in the well-known treatise of Luciani (98). Mention should also be made of the rare and valuable catalogue, by Morini and Ferrari (99, 100), of manuscripts of the faculty of Pisa, exhibited before the Eleventh Congress of Internal Medicine. This work lists the four aforementioned letters of Zambeccari to Guido Grandi (101, 102); an unpublished manuscript on secretion, entitled Idea Glandulae (103, 104); the manuscript of the Lettera della dottrina delle Separazioni (105); an unpublished manuscript containing a life of the saintly Maria Caterina Brondi, followed by a Dissertazione sul Digiuno (106); and the Lettera intorno al sonno e alla vigilia, e all'uso dell' Oppio.

With the publication of Max Neuberger's perspicuous essay (107, 108), the canonization of Zambeccari may be said to have been achieved at last. The English translation of Neuberger's article (109) has been, up to the present moment, the only extended discussion of Zambeccari to be found in the English language.

A most important body of scholarship must now be considered. This began with the work of the distinguished Carlo Fedeli of Pisa (1851-1927) who in a long career of great and diversified accomplishment (110, 111) found time to create a series of fundamental contributions to the Zambeccarian literature. In 1907 Fedeli (112)

published a handsomely printed and annotated edition of Zambeccari's Experiments, which had not been reissued since the edition by Sancassani (although Alessandri (95) in an article on renal surgery had presented a long excerpt from Mangetus' second Latin edition of 1699). Unfortunately Fedeli's useful and attractive pamphlet was printed in a limited edition and is almost impossible to procure in America. It was followed, in 1915, by an edition of the " Del Sonno, della Vigilia, e dell' Uso dell Oppio " (113), a study of neural and muscular mechanisms. This work, never before published, will be discussed in a later section of the present study. Other contributions by Fedeli were the editio princips of Zambeccari's treatise on secretion, the Lettera Sulle Separazioni (114, 115), and several essays (116, 117, 118).

It is clear that Fedeli had planned a complete study of the manuscripts and achievements of Zambeccari and we may justly regret that he did not live to accomplish his cherished object. In another publication the present author hopes to give an outline of what remains to be done in this field of endeavor.

The researches of Fedeli were paralleled and succeeded by the valuable work of P. Ferrari (4, 28), on which I have already commented (119). Ferrari's writings constitute our principal modern source for information on the life and records of Zambeccari and his family. Another important mass of data is the collection of ninety unpublished letters of Zambeccari, owned by Professor U. Calamida of Milan and described by him at a meeting of the Italian Society of the History of Medical and Natural Sciences (66), Venice 1925. According to Professor Calamida these letters contain interesting information about personal characteristics, family pride, business ventures, and all the small matters which endow a historic figure with the traits of a live human. It is to be hoped that this collection will find its way into print.

The student who has examined the researches of Fedeli and Ferrari will also be eager to study an edition of Zambeccari's " Sleep, Waking, and the Use of Opium " by the famous philosopher Giovanni Gentile (120). The brief remarks which Professor Gentile has appended to this edition consider Zambeccari's work in the light of the history of philosophy and psychology; this constitutes a valuable shift of orientation.

Another useful essay is that by Vedrani (121). This includes a complete reprinting of the " Experiments "—perhaps the most easily available of all the editions hitherto enumerated.

Completeness also requires the mention of a few minor notes,—those of Renauldin (122), Larousse (123), Garrison (124), Ferrarini (125), Haberling (126), and the convenient notices by Castiglioni (127) and Biancheri (128) in the Italian Encyclopedia.

Up to this point the present survey has dealt chiefly with Zambeccari's first and foremost work—the " Experiments." It is now necessary to examine, in greater or less detail, the other productions of Zambeccari's long and distinguished career.

The first of these was cast in the form of a letter to an unnamed patron and is entitled, " Concerning Sleep, Waking, and the Use of Opium." The actual scope of the composition is far greater than the title indicates. The essay is really an exposition of the physiology of nerve conduction and muscle contraction, upon which the author built a superstructure of opinions regarding sensory perception, learning, education, sleep, and narcosis.

Compared with the treatise on experimental surgery, the essay on sleep offers very few bibliographic problems, since it remained unpublished until the year 1915 (113). A second edition was issued by Giovanni Gentile in 1928 (120). Both editions are almost impossible to procure in this country. An English translation is now on the verge of completion.

Since Zambeccari's treatise on sleep remained in manuscript for more than two hundred years it could hardly have exerted much of an influence on the history of medicine. Despite this the work gives us a very engaging and illuminating example of the concepts that existed at the close of the seventeenth century and therefore has true claim to our attention.

According to Zambeccari's view the nerves are delicate hollow tubes, and contain a fluid called the " animal spirit " or " nerve fluid." This is secreted by glands in the brain and spinal cord and leaks out through the hollow nerves into the muscles. Now the pia mater exerts a steady pressure against the brain. As the arteries in the pia swell with each pulsation they strike against the fluid, and force it out through the nerves and into the muscles. Within the muscles

the nerve fluid mixes with blood; this causes the property of contractility.

When an animal exercises its voluntary muscles the fluid becomes more volatile and less sticky; as a result the muscles become more responsive to the wishes of the soul.

The nerves and the nerve fluid are able to vibrate, or as Zambeccari says, to undulate, and a nerve impulse is nothing more than a transmitted wave. When an external object is perceived by the senses an impact is produced against the ending of the appropriate sensory nerve. Thus during vision particles of light enter the eye, causing undulations in the optic nerve and in its fluid. These undulations are comparable to the waves which occur when a vessel containing mercury is shaken. This wave motion is perceived by the soul. Zambeccari says specifically,

> "I do not know anything in ourselves or in the wide world nearer to the nature of the soul than is motion . . . It is through motion alone that the soul functions in thinking, understanding, remembering, and in sight, hearing, taste, and touch."

When an external object has aroused its characteristic vibrations a sufficient number of times, the soul becomes able to produce the same vibration spontaneously, without the aid of the external senses. This explains such processes as memory and education.

When a nerve is set in vibration, like a pendulum, it may beat against an adjacent nerve and set up vibrations in it. Thus ideas and images can occur in series.

The soul is equipped in advance with all knowledge, since it was created by God and it is inconceivable that God should create anything imperfect. Since the soul knows everything, what we call learning is merely remembering.

This system of concepts at once arouses our curiosity. What Zambeccari has given us is really an attempt to explain the functions of the nervous system by means of simple mechanical principles which could have no other ultimate source than Galileo. We have seen that in the treatise on experimental physiology Galileo is mentioned explicitly and his Dialogue on the Two Greatest Systems is excerpted. In the treatise On Sleep and Waking, which we are now considering, Zambeccari's repeated reference to wave motion and his analogy

between a nerve and a pendulum once more reveal the Galilean influence. We may suspect that the contributions of Torricelli were also at work here (as displayed in Torricelli's De Motu Aquarum. for example), and it would not be wrong to surmise that the ideas of both Galileo and Torricelli may have reached Zambeccari directly through their own writings and indirectly through Gian Alfonso Borelli, founder of the iatromechanical school.

An examination of Borelli's book, De Motu Animalium, at once confirms this conjecture. Borelli regarded the animal organism as a machine and he considered God a supernal engineer and mathematician. Thus in the introduction to the De Motu he says (129):

> Notum perspectumque est . . . homines insatiabile sciendi desiderium habere, et ideo in admirationem operum et machinarum, summo artificio elaboratarum, Naturae instinctu facile trahi et impelli videmus . . . Tale, inquam, idioma, et characteres, quibus Creator Rerum loquitur in suis operibus, sunt Geometricae Configurationes et Demonstrationes . . . Cum enim Animalia corpora sint, et eorum vitales operationes aut sint motus, aut non sine motu peragi queant, sintque corpora et motus subjectum Mathematicae, erit talis scientifica contemplatio prorsus geometrica.

The conception of hollow nerves transmitting fluid to the muscles is found in full development in Part II, chapter III, of the De Motu, as a few selected excerpts will prove:

> Ad musculorum contractionem vitalem faciendam duae causae requiruntur, quarum una in ipsis musculis existat, altera forinsecus adveniat. Necesse est ut aliqua substantia corporea per nervos ad musculos transmittatur, vel commotio ab ea communicetur, quae possit validissimam inflationem ictu oculi efficere . . . necesse est ut aliquid aliud adjungatur, quod in ipsis musculis reperitur (130).
>
> Quidnam per nervos immittatur, qua vi et modo impellatur, et per quos canales? Et primo . . . quaerenda est structura fibrarum nervorum. Unaquaeque fibra cava esse posset, ut sunt arundines et vasa sanguinea, non obstante, quod ob visus hebetudinem solidae et repletae appareant . . . *Si igitur impossibile non est, fibras nerveas esse fistulas cavas, plane libentius concedere possumus, eas esse tubulos, repletos substantia quadam spongiosa et madida,* simili medullae sambuci virentis, ferulae aut cannae indicae (131).

Without laboring the point by unnecessary multiplication of excerpts, this evidence is proof positive that Zambeccari, like his teacher Bellini, was an adherent of Borelli's iatromechanical or iatromathematical school. Those who consult the text of " Sleep,

Waking and the Use of Opium" will find that the Borellian component is combined and reconciled with Zambeccari's fervent Catholicism. It is also important to recognize that the conception of nerves as hollow tubular conduits can be traced back to Galen and Erasistratus.

In one noteworthy respect Zambeccari's treatise on sleep differs from its more famous predecessor the "Experiments." Whereas the latter work is based directly on experimental observation and contains a minimum of conjecture, the "Del Sonno" consists almost entirely of conjecture and offers no experimental basis whatever. From this shift in method it is possible to infer that Zambeccari was not predominantly an experimentalist, but had merely engaged in experimentation while under the direct influence of Redi. With his departure from the Redian sphere of influence he relapsed to a less direct and less vital type of physiological study which for the most part was not based on experimental evidence but consisted mainly of speculation.

Such an uncharitable concept of Zambeccari's inherent tendencies is fully in agreement with whatever is known of his later work. While it is not intended to discuss this work in detail in the present essay, it may be said that we have record of no published physiological experiments by Zambeccari subsequent to his first monograph. There is evidence, which I have previously cited, that Zambeccari took part in certain experiments on Boyle's pneumatic machine (53) and that he tested some chemical properties of spinal fluid (62, 63). These few stray attempts were never published. The productions of Zambeccari's later years, so far as I have been able to ascertain, consisted mainly of dissertations and dissections. The list is as follows:

Breve trattato de' bagni di Pisa e di Lucca. Padua, Conzatti, 1712. (116)

Lettera della dottrina dei separazioni. (105)

Idea glandulae, usu et generali, doctrina secretionis. (103, 104)

Vita di Maria Caterina Brondi. (106, 132)

Dissertazione sul Digiuno. (106, 99)

Correspondence. (66, 43, 133, 134, 53)

An extensive anatomical study summarized by Corte. (60, 61)

An essay on blood-letting. (137)

An anatomical manuscript of uncertain authorship found in the Marucellian Library at Florence. (135)

Concerning the last-named work on this list, Fedeli (135) made these remarks:

> It is my ardent desire to study with due precision the anatomical manuscript found by the distinguished Comm. Bruschi, located among the documents of the old Biblioteca Marucelliana, and regarded by him as the work of Zambeccari. Through the kind friendliness of Bruschi I was able to examine this manuscript a few years ago.

According to information courteously supplied by the directorate (136) of the R. Biblioteca Marucelliana, the library contains a manuscript treatise by Zambeccari entitled *Misure di vasi del corpo umano*, and also a letter addressed to Signor N. N. and entitled *Della generazione dell' animale*. According to additional information also obtained through the kindness of the director of the Marucellian Library (138), the manuscript *Misure di vasi del corpo umano* is undoubtedly the one which Comm. Bruschi brought to the attention of Prof. Fedeli.

It is the hope of the present writer to study as many of Zambeccari's works as shall prove to be available and to place the result of the investigations within easy reach of those who are interested in the subject. In this way the ambitious wish of Fedeli may perhaps reach ultimate fulfillment.

Giuseppe Zambeccari, whose life and contributions have been examined in these pages, must be studied apart from the imponderable problem of intrinsic merit or lack of merit. He interests us especially as an example of the historical principles which prevailed at the end of the seventeenth century. By this time the gross structure of the human body and much of the microscopic structure had been fairly well described; every organ had one or more anatomists' names attached to it; and men could not be deterred from speculating as to how these various organs behaved. Necessarily the first steps of progress faltered. Yet we contemplate the crude and persistent efforts of our predecessor with critical admiration, and we hope that history will look upon us with equal affection and interest (139).

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occurs on page 22 of the book and reads as follows: "Giuseppe Zambeccari, uomo dottissimo ed eccellentissimo medico, dignissimo succesore nella cattedra d'anatomia dal famoso Bellini." The book ends with the following: "Ad laudem Dei et Gloriosissimae Virginis Mariae.—Martius Venturini Aud. Francisci I. C. Eques D. Stephani Criminalium Professor ordinarius in Universitate Pisarum, duodecim Vir. Consilii eiusdem Religionis, cum Iurisdictione delegata, nec non consultor S. Officii eiusdem civitatis Pisanae."

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    For the vital function of muscular contraction two causes are necessary, one of which is present in the muscles, the other comes from outside them. It is necessary for a certain bodily substance to be transmitted through the nerves to the muscles, or an impulse must be transmitted by it, which can produce powerful expansion (of a muscle) in the twinkling of an eye. . . . It is necessary for something else to be added which is found in the muscles themselves.

    What is passed through the nerves? by what force and by what means is it propelled? and through what channels? And first . . . the structure of nerve fibres must be examined. Each fibre could be hollow, like a reed or a blood vessel, despite the fact that the feebleness of our vision makes the nerves seem solid and dense. . . . *If therefore it is not impossible* for nerve fibres to be hollow tubes, we must freely *grant that they are tubes, filled with a certain spongy and moist substance* similar to the marrow of the green elder or the sugar cane.
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137. In a personal communication dated Sept. 10, 1940, Dr. Rodolfo Gattai, Administrative Director of the R. Arcispedale di Santa Maria Nuova at Florence, was kind enough to advise me that the Regia Universita degli Studi at Florence possesses a manuscript by Zambeccari entitled " Pensieri sul cavar sangue." I take pleasure in expressing my thanks to Dr. Gattai for his helpful note.
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139. The author takes pleasure in thanking the many scholars and historians, and librarians in America and Italy who have assisted him with information and in the preparation of photostatic material. Specific acknowledgment has been made in the footnotes in many instances.

TRENDS IN MEDICAL EDUCATION

A Program for a New Medical School

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The present paper was not written for publication originally, but as a memorandum for students. It was to serve as the basis for a discussion in a seminar course on the development of social medicine that was held at the Johns Hopkins Institute of the History of Medicine during the academic year 1939-1940. Only a few copies were sent outside the Institute to colleagues whom we knew to be particularly interested in the subject. Somehow, the paper became known and there were so many requests for copies that I finally decided to publish it.

I am well aware that the paper is very sketchy, and that the suggested plan needs further elaboration and can be greatly improved. I also fully realize that it would be difficult to put such a program into practice integrally under the present conditions, a fact which makes it appear rather Utopian. I am publishing it, nevertheless, in the hope that it will stimulate thought and discussion.

I. The Need

1.

Education always presupposes an educational ideal. General education has an ideal citizen in mind, and the purpose of the schools is to produce this ideal citizen or at least to train young people toward that goal and to bring them as close to the ideal as possible.

Similarly, medical education has an ideal physician in mind. Schools and curricula are organized in such a way that their end product will be a physician who conforms with the ideal or comes as close to it as possible.

It is important to know that the medical ideal has changed a great deal in course of time and is evolving constantly. As a result, medical education can never reach definite forms but is obliged to adapt itself to changing conditions. Every society required of its

physician that he have knowledge, skill, devotion to his patients and similar qualities. But the position of the physician in society, the tasks assigned to him and the rules of conduct imposed upon him by society changed in every period. The physician was a priest in Babylonia, a craftsman in ancient Greece, a cleric in the early and a scholar in the later Middle Ages. He became a scientist with the rise of the natural sciences, and it is perfectly obvious that the requirements put upon the physician and the tasks of medical education were different in all these periods.

We must keep in mind that the picture a society has of its ideal doctor—the goal of medical education—is determined primarily by two factors: the social and economic structure of that society and the technical means available to medical science at that time.

When the medical ideal is clearly defined and conscious in the people's minds, medical education adapts itself and reaches for a while more or less stable forms. In periods of transition, however, when social and economic conditions change rapidly, when the medical ideal is not clearly recognized, or when different generations have different ideals, there is by necessity unrest in medical education. The majority of educators, conservative by nature, may remain convinced of the excellence of existing institutions, while others will feel critical and will seek new forms, a system that will train not the physician of yesterday but the physician of to-morrow. At such a moment the time has come for clear analysis of the situation and for courageous experimentation.

2.

In the first half of the 19th century the American physician was a family doctor. The structure of the society he was called to serve was infinitely simpler than today. Only one out of five gainfully employed persons was a wage-earner or salaried employee, while four were independent farmers, craftsmen or business men. Medical science was still undeveloped technically. The physician was trained on a more or less empirical basis with a very thin theoretical foundation. The length of studies was short and the physician could begin to practise with simple and inexpensive equipment. As a result of all these factors the cost of medical care was relatively low and

large sections of the population could afford to purchase medical services. The doctor succeeded in making a decent living by serving a number of families regularly. Fee schedules allowed him to apply the sliding scale and he gave his services free of charge to indigents who called on him, or in hospitals with which he was connected. Hospitals were few, simple in equipment and serving the indigent population.

At the time of the Civil War medical conditions were chaotic. The rapid expansion of the country and the pressing demand for more physicians had led to the foundation of a large number of proprietary medical schools which were neither physically nor intellectually prepared to train competent physicians.

A gradual readjustment took place after the War. Since the schools could not be trusted, the States required a license for practice which was granted after successful examination given by a State Board of Medical Examiners. Medical Societies founded in increasing numbers endeavored to improve conditions of education and practice. In 1889 the Johns Hopkins Hospital and in 1893 the Johns Hopkins School of Medicine were opened in Baltimore. A new departure was made in American medical education.

3.

In the 50 years preceding the opening of the Johns Hopkins Medical School medical science had made great progress. Improved microscopes made the investigation of cellular structures possible. Physiology was revolutionized by the progress of physics, particularly of electricity and optics and by the tremendous development of organic chemistry. This new physiology was creating a new experimental pharmacology and a new scientific hygiene. Pathological anatomy had become cellular pathology and this new principle applied to a study of diseases of skin, eyes, ear and other organs created new disciplines. Bacteriology was beginning its triumphant way and revolutionized public health and surgery. A new clinic developed which was based on clinical observation, pathology and the laboratory.

The task of medical education around 1890 was to train a

physician who would still primarily be a family doctor, to be sure, but who would be a scientific physician fully equipped with all means of medical science and prepared to cooperate with the hospital which was also changing its character basically. It was no longer merely a place for the treatment of indigent patients, but was now sought by all groups of the population for examinations, treatments and for childbirth.

The men who founded the Johns Hopkins Medical School took over elements of the various European systems of medical education and succeeded in blending them into a new system which proved to be very satisfactory. The basic principles of this system can be summarized as follows:

1. The requirements for admission were raised. Only those students were admitted who had completed a full college course including prescribed courses in biology, physics and chemistry and who had a working knowledge of Latin, German and French. Medical education became graduate education.

2. Lectures which so burdened the German curriculum were reduced to a minimum and replaced by seminars and practical courses.

3. All instruction was given by men actively engaged in research in their respective fields.

4. The medical course was 4 years. The first two years were devoted to laying a solid foundation in the basic sciences. Most instruction took place in laboratories. The second two years were devoted to clinical instruction in hospital wards, dispensaries and clinical laboratories.

5. The system of spoon feeding with its quizzes and tests still customary in the schools was abolished. The students were treated as adults and given great freedom in organizing their studies and supplementing required by selective courses.

Internship in a hospital after completion of the medical course was not required but encouraged, and practically all graduates interned for one or more years. An internship of one year later became a requirement for the state board examination of a number of states.

The Johns Hopkins School of Medicine set an example that was followed by other schools in the ensuing decades. The wise and energetic policy of Abraham Flexner and of the General Education Board and the standardizing influence of the American Medical Association and the American Association of Medical Colleges wiped out inferior schools and compelled others to reorganize from the very bottom. This process, slow in the beginning, was accelerated after the World War and today the country has 10 two-year schools of medical sciences giving adequate instruction in the basic sciences and 66 four-year schools training scientific physicians.

In Europe medical faculties of the universities admit all students seeking admission provided they can satisfy the entrance requirements. If the number of students increases, the university is obliged to increase its educational facilities, or, at least, is supposed to do so, which is not always the case. In the United States the tendency was, and still is, to limit the number of students according to facilities available. The present schools admit from 50 to 180 students every year. While there undoubtedly are advantages in having a small, carefully selected body of students instructed in small groups by a large faculty, the system has led to serious discriminations, and has provided an easy pretext for racial and other prejudices.

Colored students are refused admittance in all southern schools—and in this respect the South extends very far north. They are segregated into two colored schools (Howard, Meharry) and only very few of them are admitted incidentally to northern schools where their position is far from enviable. The high tuition fees exclude them automatically from many northern schools. Jewish students are subject to a tacit, but nevertheless highly effective, quota-system and in most schools the number of Jewish students admitted rarely exceeds 10 per cent of the total enrolment. Discrimination is also applied against women, whereby the idea is that women are not a safe investment since they may marry and not exercise their profession.

4.

Is there any need for a reorganization of medical studies? In order to answer the question we must raise another: Have con-

ditions changed in the last 50 years? Will the society of to-morrow require a different type of physician than that of yesterday?

The changes have been tremendous indeed. Medical science has progressed still further and has become still more technical and still more specialized. A highly developed physiology using complicated methods of chemistry and physics has become the backbone of every medical field. The discovery of hormones and vitamins has opened up new horizons. New diagnostic methods such as the application of X-rays and the electrocardiograph allow a sharp analysis of a patient's condition. New methods of treatment have made it possible to cure diseases that were deadly only yesterday. Public health no longer limits its field to the traditional tasks of quarantine and sanitation. It has moved closer to the individual and has established services for the care of pregnant women, infants, school children and for the combatting of venereal diseases, tuberculosis and industrial diseases.

As a result of these developments the incidence of disease has changed completely. Acute diseases are no longer in the foreground but the chronic diseases of mature and old age, those diseases that require close and steady supervision by the physician.

Medical science is sufficiently advanced today to give the physician the scientific means necessary in order to practise preventive medicine on a large scale. Prevention of disease must be in every physician's mind whatever his position may be.

In the last 50 years the scope of medicine has broadened considerably. The doctor is no longer the mere therapist that he used to be. He has become the adviser of the educator. Mental hygiene, in its infancy still, will become the chief method in keeping developing individuals socially adjusted, the chief weapon in the prevention of crime.

The doctor has become the scientific and psychological adviser to the court. The administration of the law would be impossible without the physician. He determines the cause of death and the circumstances under which death occurred. He determines the responsibility of the defendant, and more and more often he is called upon by the judge to advise him in determining a sentence that will not punish but rehabilitate and readjust an unsocial individual to his environment.

The physician is also increasingly becoming the adviser to the statesman. The chief cause of disease still is poverty with all its dire consequences—slums, malnutrition, prostitution, alcoholism, and crime. The solution of these problems is not medical but political. The physician, however, who is in close touch with the people, who daily sees the evil effects of poverty for the individual and for society, has an important task to fulfil. He knows the conditions—conditions that are often not mentioned aloud so as not to disturb the people's minds. He can draw the attention of his fellow-citizens to these conditions, can tell them what slums mean, not only to their inhabitants but to the community at large. He can contribute to keep the conscience of society awake, can advise the statesman technically, and as a citizen can assume leadership in improving conditions.

The progress of medicine necessarily increased the cost of medical care so much that today large sections of the population are unable to purchase the medical services they need. Philanthropic institutions can not possibly satisfy the demand. And while the development of science and technology led to great medical progress, the same factors effected basic changes in the structure of society. When electricity was introduced into industry around 1900, a second industrial revolution took place and we find ourselves today in a highly industrialized, highly specialized and differentiated society in which four out of every five gainfully employed persons are wage-earners or salaried employees. In a society in which four-fifths of all bread-winners depend for a living on the labor market, have a job today but may lose it to-morrow, there is obviously a strong feeling of insecurity and, as a consequence, a strong demand for social security in health matters.

There can be no doubt that adjustments will be made in the distribution of medical care in a very near future. We do not know yet whether this will be effected through an extension of public services, voluntary or compulsory insurance or a combination of all, but one thing is certain, that the physician of to-morrow will practise medicine under different conditions than in the past.

5.

From all that has been said it became apparent that great changes have indeed occurred in the last fifty years in medicine and in society, and whoever is aware of developments cannot doubt that a new type of physician is needed.

We still need, more than ever, a scientific physician, well-trained in laboratory and clinic. But we need more: we need a social physician who, conscious of developments, conscious of the social functions of medicine, considers himself in the service of society.

There is no point in training doctors primarily for city practice among the upper middle class. The overwhelming majority of all patients consists of people of very moderate means, of people on relief, indigents and poor negroes. At the point of development at which we stand, we shall have millions of unemployed with us for years to come and we must reckon with this fact. A war economy may lead to a temporary boom but is not a permanent solution. The average student, while he is in medical school, hopes for a lucrative practice that will allow him to give services of high quality, applying all the scientific devices with which he becomes familiar during the course. Very few ever get such a practice. The majority of all young physicians soon realize that they cannot apply much of what they have learned. Patients are too poor to pay for the examinations or treatments they need, or adequate hospital facilities are unavailable. The scientific standard of the young doctor soon drops, particularly under the pressure of sometimes strong competition. He develops a routine. Unable to collect many of his bills, he becomes dissatisfied.

We must train our students in the idea that they will have to serve first of all the low-income groups who need their services most. We must make them familiar with their problems, their living and working conditions. We must show them the best that can be done under existing conditions and must impress upon them that medicine is not competitive business but a service, that there is no direct relation between their work and their income. All they can hope for materially is to make a decent though modest living but the compensations are endless.

The general practitioner will remain the core of the medical profession, but alone, left to himself, he is lost and cannot possibly practise scientific medicine. He needs the backing of a health centre or hospital and a group of specialists whose help and advice he can seek. In other words: practice tomorrow will by necessity be group practice organized around a health centre. This was already recommended in 1932 by the Committee on the Costs of Medical Care, and whatever plans of medical organization may be adopted in the future, they must ultimately accept the principle of group practice since this is the most efficient form of medical service. It is important therefore to train students from the beginning in teamwork and in a spirit of cooperation.

Medicine must become preventive medicine. To quote Sir George Newman, " The ideal of medicine is the prevention of disease, and the necessity for curative treatment is a tacit admission of its failure."

The barriers between preventive and curative medicine must be broken down. This cannot be achieved by adding a few courses to the curriculum. A new attitude must be developed. The student must become interested in health, not only in disease. Clinical medicine must be taught differently than heretofore. Every case must be analyzed medically and socially as to the factors that have made it possible, and conclusions must be drawn how to prevent similar cases in the future.

Since the physician will have to cooperate very closely with public health officers he must be familiar with the elementary tasks of public health.

And so we actually begin to see the outlines of a new physician. Scientist and social worker, ready to cooperate in teamwork, in close touch with the people he disinterestedly serves, a friend and leader he directs all his efforts toward the prevention of disease and becomes a therapist where prevention has broken down—the social physician protecting the people and guiding them to a healthier and happier life.

6.

We now must raise the question whether the existing medical schools of the country are aware of this new ideal and have adjusted themselves to the changed conditions. The answer is definitely: no.

There is no doubt that American medical education has greatly progressed technically. Scientific standards are as a rule high. New courses have been added to the curriculum to include new subjects. But basically the curriculum has not changed. Spirit and objective remain the same. As in the past students are trained in the technology and not in the sociology of medicine.

It is interesting to study in this respect the latest document published by the American Medical Association, *Medical Education in the United States, 1934-1939*. The words society, sociology, economics, history do not occur in the index. Interesting experiments undertaken in various schools to broaden the scope of medical education are not even mentioned. Nobody reading the report could possibly find that it was written in 1939.

Once we recognize that conditions of medicine and society have changed and that a new type of physician is needed we must admit that the objective of medical education has changed also. A new medical school with a new curriculum to make a new step forward in the training of physicians is needed today as it was 50 years ago when the Johns Hopkins School of Medicine was organized.

II. Principles.

1. The School shall be open to qualified students irrespective of race, creed or sex.
2. Requirement for admission shall be the successful completion of a two-year course in a College of Arts and Science of recognized standard, or its equivalent.
3. The medical course shall be based upon a curriculum of six years' duration.

About 50 per cent of all students entering medical schools have a bachelor's degree and the tendency of the better schools is to require the completion of a college course of 4 years. The traditional medical course of 4 years, however, is too short for adequate training and it seems advisable therefore to work the 2 senior college years into the medical curriculum. This allows a much better integrated program. Departments of physics, chemistry and biology, moreover, are valuable assets to a medical school in its research work.

4. The Degree of Bachelor of Science shall be conferred upon students after successful completion of the first two years of the course and presentation of an acceptable essay.

5. The Degree of Doctor of Medicine shall be conferred upon students after successful completion of the full six-years' course and presentation of an acceptable dissertation.

While most continental European universities require an inaugural-dissertation British and American universities do not. Yet it cannot be denied that the educational value of the preparation of a dissertation is tremendous. It teaches a student methods of research and trains him in presenting a scientific subject adequately. It reminds him that his duty later as a practitioner will be to contribute to the advancement of medicine by making important observations known. To the departments of the School the student dissertations offer a welcome opportunity to have a good deal of accessory research done and materials published.

6. Postgraduate education is becoming increasingly needed and the School should foresee the establishment of various types of postgraduate courses such as: 1. Short courses of a few weeks on a specific subject; 2. Courses of several months on a broader subject and possibly 3. An all-round one-year course.

7. The training of auxiliary medical personnel (clinical nurses, public health nurses, midwives, medical social workers, laboratory technicians, etc.) is just as important as the training of physicians and needs just as much reorganization along new lines. The School should foresee a special division for the training of such personnel, closely integrated with the curriculum of the medical student. Students of medicine must learn from the very beginning to work in teams with the auxiliary personnel.

8. The tuition fees should be kept as low as ever possible and scholarships should be available for all groups of students.

9. Students must learn to practise preventive medicine on themselves. The School should foresee a *Medical Service* to provide entrance and periodic examinations as well as treatments to all people employed in the School (faculty, students and employees).

III. The Medical Course

A. General Remarks

1. Education is self-education. Purpose of the curriculum is to guide the student and to help him in developing his personality and a correct attitude toward the problems of health, and in acquiring knowledge and skills in the technology and sociology of medicine.

2. The student shall be in touch with the sick man from the first year on.

The young student entering school is most eager to get in touch with patients and yet under the present system he must wait years before he sees a sick man. There is no doubt that a solid scientific foundation is necessary for clinical work, but by doing some nursing and medical social work and by assisting physicians in the dispensaries the student will acquire valuable experiences particularly in practical psychology. Such work, moreover, will give added meaning to his theoretical studies.

3. The academic year shall be 8 months or 30 weeks and shall be divided in 2 semesters of 15 weeks each. In order to prevent the curriculum from becoming rigid, not more than ¾ of the time available shall be devoted to required courses. The student shall have ¼ of the time available for independent work and for attending elective courses.

Time available for Instruction

	Total number of hours	Required	Free and Elective
Year	1200	900	300
Semester	600	450	150
Week	40	30	10

4. Instruction shall consist of lectures, seminars, conferences, demonstrations, excursions, practical work in laboratories and hospitals, field work, and student activities.

5. Required courses shall be supplemented by elective courses offered by all divisions and departments whereby special attention will be given to joint seminars of the various divisions for the study of such problems as: Rural Health, Health Problems of the Negro Population, etc.

6. The academic course shall be supplemented by 2 months of field work every summer. See page 192.

B. The Course Year by Year

Only required courses have been listed and the number of hours indicated for each course is a mere suggestion intended to show that such a curriculum is possible. It is obviously not the number of hours that counts but the quality of instruction. Subjects have been listed under their general heading and will have to be subdivided, for instance, anatomy into gross anatomy, histology and neurology. A subject like physical therapy has not been listed especially, but will be taught under medicine and surgery. The distribution of courses over the 2 semesters, their sequence and integration will have to be worked out. Methods of instruction have not been discussed since this would require a paper in itself. The purpose of the following list is merely to indicate in a summary way the chief subjects to be included in the curriculum whereby the traditional headings have been preserved for the sake of brevity.

I. First Year

	HOURS
1. Introduction to Medicine	30
2. History of Science	30
3. Philosophy	15
4. Languages and Literature	60
5. Mathematics	30
6. Physics	200
7. Chemistry	205
8. Biology	240
9. Nursing, Medical Social Work, Dispensary Work	90
Total	900

II. Second Year

	HOURS
1. History of Medicine	30
2. Anthropology (Physical and Social)	30
3. Psychobiology	30
4. Languages and Literature	60

5.	Biostatistics	30
6.	Chemistry	210
7.	Anatomy	210
8.	Physiology and Physiological Chemistry	210
9.	Nursing, Medical Social Work, Dispensary Work	90
	Total	900

III. Third Year

		HOURS
1.	Sociology	30
2.	Anatomy	210
3.	Physiology and Physiological Chemistry	210
4.	Pathology	175
5.	Bacteriology	75
6.	Epidemiology	30
7.	Psychopathology	30
8.	Prevention, Diagnosis, and Treatment of Diseases[1]	140
	Total	900

IV. Fourth Year

		HOURS
1.	Economics	30
2.	Pathology	150
3.	Pharmacology	75
4.	Nutrition, Housing, Sanitation	45

[1] An introductory clinical course given jointly by all clinical professors. The purpose of the course is to train the students in the observation of disease symptoms and in clinical thinking. The unity of medicine will be stressed so that the student realizes that medicine does not consist of specialties, but that pathological processes are basically the same in all organs and that only the methods of diagnosis and treatment are specialized.

5.	Medicine[2]	175
6.	Surgery[2]	175
7.	Obstetrics–Gynecology	130
8.	Pediatrics	75
9.	Psychiatry (Psychoses)	45
	Total	900

V. Fifth Year

		HOURS
1.	Social Medicine	30
2.	Medicine	175
	3. Dermatology	45
4.	Surgery	175
	5. Ophthalmology	75
	6. Oto-Rhino-Laryngology	50
7.	Radiology	45
8.	Pediatrics, Including Infant Welfare and School Hygiene	75
9.	Obstetrics–Gynecology, Including Theory and Practice of Birth Control	125
10.	Psychiatry (Neuroses)	45
11.	Clinical-Pathological Conference	30
12.	Medico-Sociological Conference	30
	Total	900

VI. Sixth Year

		HOURS
1.	The Physician in Society	15
2.	Public Health Administration	15
3.	Medicine	175
	4. Neurology	60
5.	Surgery	160
	6. Orthopedics	30

[2] Time will be taken off for instruction in physical and laboratory diagnostics.

7.	Urology	30
8.	Stomatology	30
9.	Tuberculosis, Clinical and Social	60
10.	Venereal Diseases, Clinical and Social	70
11.	Industrial Hygiene, Occupational Diseases, Workmen's Compensation	60
12.	Physical Education, Rest and Recreation	30
13.	Forensic Medicine	60
14.	Mental Hygiene	45
15.	Clinical Pathological Conference	30
16.	Medico-Sociological Conference	30
	Total	900

VII. Field Work

The academic course shall be supplemented by two months of field work every summer.

Teams, consisting of students of medicine, nursing, midwifery, etc. shall be sent out with or without instructors—according to the task—and their work shall consist of surveys in various regions, work in connection with public health agencies, nurseries, clinics, co-operative health associations, C. C. C. camps, etc., medical relief in distressed areas and similar tasks.

A plan shall be worked out according to which the student during the course of five summers will get a comprehensive view of the health situation and problems of the country and will gain considerable practical experience. During the academic year the various teams will report on their activities and observations.

In the beginning the School will have to make arrangements with various agencies. Later it may consider the establishment of its own health centres in strategic points of the country.

C. *Summary of the Course According to Subjects*

[The Roman numerals indicate the year.]

I. Social Sciences and Humanities.

Introduction to Medicine	I
The Physician in Society	VI
Social Medicine	V
Languages and Literature	I-II
History of Science	I
History of Medicine	II
Philosophy	I
Social Anthropology	II
Sociology	III
Economics	IV
Medico-Sociological Conference	V-VI
Field Work	

II. Natural Sciences.

Mathematics	I
Biostatistics	II
Physics	I
Chemistry	I-II
Physiological Chemistry	II-III
Pharmacology	IV
Biology	I
Psychobiology	II
Anatomy	II-III
Physical Anthropology	II
Physiology	II-III
Pathology	III-IV
Bacteriology	III
Forensic Medicine	VI
Clinical-Pathological Conference	V-VI
Field Work	

III. Hygiene, Public Health, Social Medicine.

Biostatistics	II
Bacteriology	III
Epidemiology	III
Nutrition-Housing-Sanitation	IV
Social Medicine	V
Medical Social Work	I-II
Infant Welfare, School Hygiene	V
Birth Control	V
Tuberculosis	VI
Venereal Diseases	VI
Industrial Hygiene	VI
Physical Education	VI
Mental Hygiene	VI
Public Health Administration	VI
Medico-Sociological Conference	V-VI
Field Work	

IV. Clinical Medicine.

Nursing, Medical Social Work, Dispensary	I-II
Medicine	III-VI
Dermatology	V
Neurology	VI
Tuberculosis	VI
Venereal Diseases	VI
Occupational Diseases	VI
Pediatrics	IV-V
Psychiatry	II-VI
Psychobiology	II
Psychopathology	III
Psychiatry—Psychoses	IV
Psychiatry—Neuroses	V
Mental Hygiene	VI
Surgery	III-VI
Orthopedics	VI

Urology	VI
Oto-Rhino-Laryngology	V
Ophthalmology	V
Stomatology	VI
Obstetrics-Gynecology	IV-V
Radiology	V
Clinical-Pathological Conference	V-VI
Medico-Sociological Conference	V-VI
Field Work	

IV. Courses for Auxiliary Medical Personnel

Program will have to be worked out.

V. Postgraduate Courses

Program will have to be worked out.

VI. Organization of the School (See chart p. 196).

Most medical schools in America were founded as departments of universities or became sooner or later connected with universities. The development was significant in that it raised the standard of the schools to that of universities. It undoubtedly is of material benefit for members and students of a medical faculty to be able to live and work in close touch with members and students of other faculties.

In most cases, however, this cooperation is made impossible, or at least very difficult by the fact that university and medical school are located either in different cities or in different sections of a city so that the connection is merely administrative.

A new medical school, unless it can be affiliated with a first-rate university and built on the same campus, may be organized as an independent academic unit with the following structure:

1. *Board of Trustees.*

In charge of financial management, general business matters and appointments, the latter upon recommendation by the Council. The Board should include faculty members.

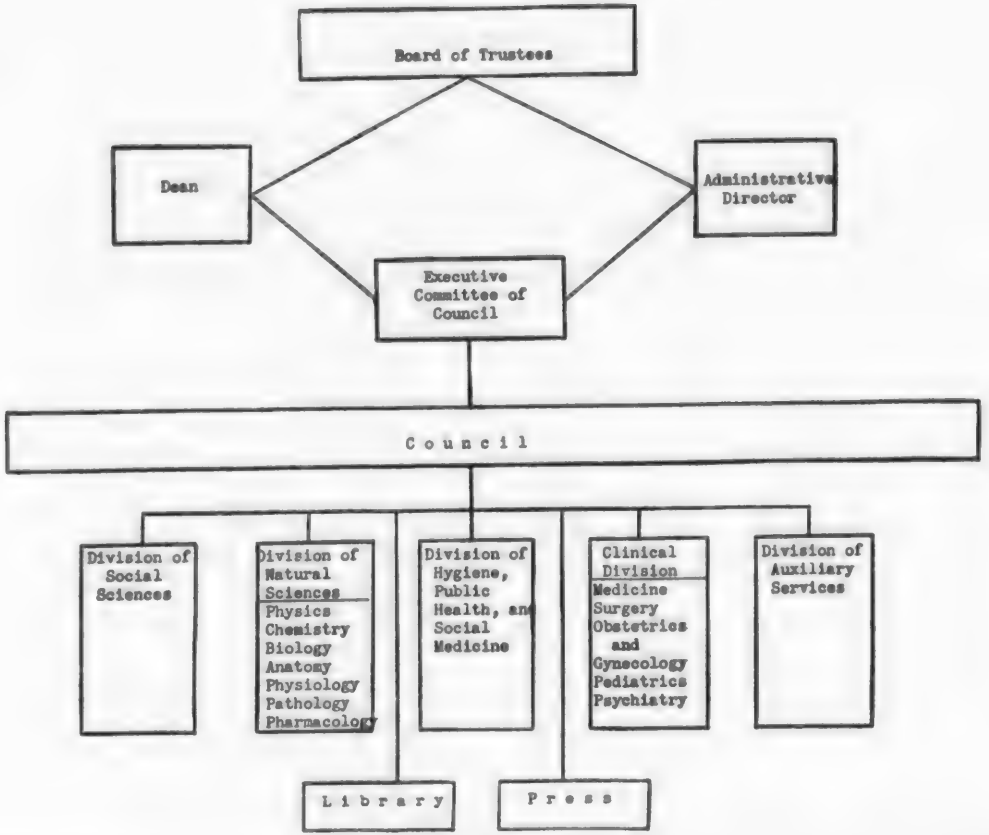

Fig. 1.
Organization of School

2. *Dean.*

In charge of all educational matters.

3. *Administrative Director.*

In charge of all administrative matters, subordinated to the Dean.

4. *Council.*

Consisting of,

Dean, as chairman
Director, as secretary
Heads of Divisions
Heads of Departments
Delegates from all academic ranks
Student delegates
Superintendent of the Hospital
Librarian
Head of Press

The Council shall be a truly democratic body meeting at regular intervals for the discussion of all matters of the School. Since it will be rather large, it shall elect an

5. *Executive Committee of the Council.*

To perform the current business of the Council.

6. *Academic Divisions and Departments.*

I. *Division of Social Sciences.*

II. *Division of Natural Sciences.*

Departments:

1. Physics, including Mathematics
2. Chemistry
3. Biology
4. Anatomy, including Physical Anthropology
5. Physiology
6. Pathology, including Bacteriology and Forensic Medicine
7. Pharmacology

III. *Division of Hygiene, Public Health and Social Medicine.*

No special departments considered as yet. The division can be developed for the training of public health personnel.

IV. *Clinical Division.*

Departments:

1. Medicine
2. Surgery
3. Obstetrics and Gynecology
4. Pediatrics
5. Psychiatry

Clinical specialties will be attached to the various departments.

V. *Division of Auxiliary Services.*

7. *Library.*

8. *Press.*

A new school will probably require a new journal, new text books and monographs. It may be advisable for the school to consider the organization of its own press, unless a university press is available.

TEXTS AND DOCUMENTS

A SIXTEENTH CENTURY CONSULTATION OF DOCTORS AMATUS, LAGUNA AND BARBOSIUS

CONCERNING

Dysentery and Intermittence of the Pulse

HARRY FRIEDENWALD

The following account of a consultation took place in the middle of the 16th century. Three physicians participated, two are famous, Amatus Lusitanus and Andreas Laguna, concerning whom the writer has published accounts.[1] The third, Dr. Barbosius, is known only through statements found in Amatus' writings and will be dealt with in a future number of this Bulletin in a paper on "The Medical Pioneers in the East Indies." There attention will be called to a discussion of his suffering from severe dysentery followed by intermittence of the pulse. Because of this illness the three held a consultation and this is recorded in a dialogue reported by Amatus.[2]

We owe this graphic report to the dialogue form; this Amatus uses occasionally in his 700 cases published in seven volumes of "Centuria."[3]

The interest it aroused led the writer to submit Amatus' report to Dr. John T. King of the Johns Hopkins Medical School, and the remarks that he has kindly written, follow:

"There is a good deal of talk about the single dropped beat, or intermittence of the pulse. This description of course applied to the extrasystole, the commonest of all irregularities. In spite of Galen's view that intermittence is the first step toward complete cessation and death, extrasystolic arrhythmia, of course, has very little importance.

[1] Amatus Lusitanus, *Bulletin of the Institute of the History of Medicine*, 1937, Vol. V, pp. 603-635; Andreas a Laguna, *idem*, 1939, Vol. VII, pp. 1037-1048.

[2] Centuria III, Curatio 44. The writer will show that the consultation took place between 1551 and 1554.

[3] Garrison, *History of Medicine*, 4th edition, p. 231, states, "the form of a dialogue has already been utilized by Euricius Cordus (1486-1535), . . . Cologne, 1535.

" In the case of Barbosius, it seems that a sequence of regular beats is followed by a pause approximately equal to two and a half beats. Without an actual graph it would be difficult to estimate accurately the duration of such a pause, and it is described not only as " two and a half beats " but as a little over two beats. The most likely explanation would be that Barbosius had two extrasystoles together after a period of normal rhythm. Extrasystoles are common after any infectious disease, and the attack of dysentery affords a logical background. Gastrointestinal disturbances in general are an additional cause. Either or both may have been concerned in this case.

" I wish I could make a heart block out of this picture as I think it would then constitute the first clinical description, but it would be rash to attempt such an interpretation."

The following is a close translation of Amatus' case history.

Concerning Dysentery; also Concerning Intermittent Pulse.

Barbosius, a learned physician possessed of long experience,—having a rather inflamed bilious temperament, so inflamed in fact that he succumbs to diseases and illnesses from any cause whatever, however slight—has now sunk into dysentery so dangerous that within a night and a day it has constrained the man to void a hundred times. Moreover, there had been expelled much fluid of a generally ashy color, mixed a little with blood; with these symptoms he was not particularly feverish but had pain in the region of his liver as if the intestines themselves were rather swollen. Summoned to him on the following day, I found the man frightened and feeble in strength; his pulse was weak and contracted. Wherefore our aim was directed toward restoring his strength and checking the flow. The first of these objects we achieved with rich foods; the second with clysters: at first soothing ones, later clysters made of goats' hair and similar things, about which we spoke at length in the second Centuria composed at Venice. When these remedies and some others necessary for the liver had been employed—remedies which possess the faculty of cooling and strengthening—the dysentery was checked in a short space of time, in fact within a day, and within

three days the invalid was completely cured. But when this man, now recovered, could go outdoors and, feeling his own pulse, had discovered that it was intermittent, he came to me in order that I might give an opinion about it. He was not, however, free from some fear of death, although he stressed the fact that he had suffered a similar condition previously when, as a younger man, he had been seized with a rather serious illness in Portugal; he is a man fifty years of age. Considering the pulse beats of my friend's arteries very carefully, I find that after ten separate pulse beats corresponding equally to each other the beating of the arteries failed in such a way that in the interval two and a half pulsations could be supplied. Moreover, as I have said, the pulse stopped and rested after each ten beats so that in the interval of time during which the pulsation was hidden two and a half pulse beats could be supplied. When I perceived this I bade him be of good cheer since, although it indicated a weakness in the vital faculty, no danger threatened then, I said, especially in the case of a man fifty years old and not attacked by any fever. Being particularly experienced in medicine, however, he made objection to me in the following way:

Barbosius: It is not unknown to me, Amatus, although I do not possess the more elevated learning of Galen, that an intermittent pulse is the worst of all, for, just as death is the complete failure of vital action, so an intermittent pulse indicates the greatest weakness in the vital faculty because it has ceased its work and turns out to be like death in this respect. But since, as you know, I have spent many years among the Indians among whom learning is not considered of much worth and the noble teaching of Galen is not practiced, I beg you not to be reluctant to set forth the cause of this interruption, according to Galen. Since, as you know, Avicenna in this discussion about pulses acted lazily and slowly according to his rule, I think it would bring me no little pleasure to know the cause of this interruption. We are human and, since there is among us speculation especially about death and its causes, we turn out to be like the greatest philosophers; for, as you know, contemplation of death and discussion about it is the highest philosophy. For it induces men to fear God and encourages them to be kindly-disposed towards human beings.

Amatus: Rightly, Barbosius, have these statements been made by you and uttered with great judgment. Would that the Gods might wish all present-day physicians to be like you, and then I should have no doubt that your medical science would not be practiced by them so casually but with great prudence and notable discussion. Moreover, these remarks of yours show knowledge of the famous learning of Galen and are redolent of firmer and better teaching; in fact, they seem to flee far away from the courses and petty cautions of the sophists. Not undeservedly were you considered the foremost physician among those who ruled that land where you have so long lived, where they not only employed you, so great a man, to ward off diseases but also sought your counsel in the most difficult and hazardous actions; whence you have gathered to yourself benefits of fortune that are not to be scorned, so that you can pursue this life tranquilly and comfortably as you now pass it. May the gods preserve you for us safe and well for a long time. Now, however, that you may obtain your wish, listen: for I shall begin rather far back, all the more so because we have a wide field for discourse—indeed, even those Asiatic gardens of Galen, from which all afterwards have decorated their gardens. For this is the wealthiest ocean of medicine, from which all medicinal waters, streams, rivers, and fountains derive their origin and to this same source hereafter, if only they are observed with sound judgment, all that they have received ought to be referred. To follow him, therefore, and to hold him fast, and to understand him best is the highest duty of medicine. Now he says in the second book "Concerning prediction or foreknowledge from pulses"—not to prolong the speech too far—an intermittent pulse is necessarily uneven: for now at intervals of three beats, now of four, and sometimes of five or even more, it is found to fail.

Barbosius: My pulse, however, as you have rightly perceived, stopped after each ten beats and it delayed for the space of time in which the artery could beat two beats and another half.

Amatus: That is true.

Laguna: If Galen had lived he would never have ceased marvelling sufficiently over this pulse, all the more so because in the work just cited he asserts that he had never seen a similar pulse attended by the recovery of the patient.

Amatus: So Galen seems to have thought, Laguna, but his opinion, cited by you, must be taken with a grain of salt (as the saying goes) and must be understood with sound judgment.

Barbosius: I beg you, most learned men, in order that other physicians may be taught by my illness, nay rather, in order that when they have come to visit those who have similar pulses, the patients themselves may not be astonished, do not refuse to set forth openly Galen's words on this matter.

Amatus: Laguna would accomplish that more readily, if he were willing, since he has an abridged Galen in his possession.

Barbosius: The learned Laguna will do me a very welcome favor, one to be marked with a white stone, if only after he has brought the copy of Galen abridged to an Epitome * he will explain the meaning anew.

Amatus: He will fulfil your request and will respond to your prayer so clearly and so suitably that you will have nothing further to desire. For so plainly and clearly has he epitomized Galen, who does not discuss matters sparingly, that for the understanding of Galen physicians now have need of no other interpreter than just Laguna; even unwilling you ought to agree to this.

Barbosius: It is a fortunate age that has found such a man. You know, Amatus, when a few days ago we had both visited a certain book shop with the purpose of buying certain new books printed at Venice, some physicians were present there (as is wont to happen), carping especially at Laguna because he had cut the author Galen—not even the least particle of whom should be omitted in reading—and because he had rendered him in an abridged and mutilated form, was no less sin than if he had decapitated the Zeus of Phidias or the Cnidian Venus.

Amatus: Indeed I remember that, but we scorned them with their base teachers who still reeked of barbarousness. Be sure that Laguna returns to us and do not be ashamed to listen to him.

Barbosius: I would see to it that the man was fetched by this boy, unless he had promised to return to us straightway.

Amatus: The noble and good man was just now coming to us, but

* Laguna's *Epitome Galeni* . . . . *Operum* was published in Basle in 1551.

that black wolf, crafty, loquacious, evilly obsequious, unskilled in laws, drew him back from us.

Barbosius: I know that loquacious wolf who formerly lived at Rome in the shrine of the divine Antonius, because of whom and his like, Pythagoras, the foremost philosopher, was wont to say in his riddles: "Do not accept into your house a swallow, that is, a loquacious fellow."

Amatus: Away with you! away with you, *Barbosius*, for Laguna is now with us. Ask him, if it please you, to bring forth his abridged Galen concerning this matter which we are discussing.

Barbosius: I shall carefully see to it. Now Laguna, since you return to us—so long awaited that because of your absence we have thus far kept silent about the question propounded by us and by diverting our conversation to other channels have left the question unexamined,—please be gracious enough to cite from your Galen reduced to an Epitome, the words which seem applicable to this matter.

Laguna: I shall gladly do so, and with equanimity I shall undertake the task, all the more so that you may have precise knowledge of your intermittent pulse. Listen, then: In the book cited by you, in the fourth chapter, Galen reads in this way in my Epitome: "Suppose there is an artery with the beating of the arteries interrupted for a space of two beats or a little more: often have I seen a man relieved, especially when he was an old man, for his faculties, being slow, are often hurt by small attacks. Strong faculties, however, are upset only by the greatest attacks. Therefore those who are in good health, who have for a long time been free from illness, are endangered if they are caught by these attacks. But weak people and those who have continually been subjected to all their causes, most easily resist; because, of course, none of them when injured by anything, even the smallest thing, expects a great cause. And so intermittent pulses are less dangerous to old men than to young men. Next to old men they are less dangerous to boys, because through their breathing they digest and dissipate the abundant and thick fluids which produced uneven intemperateness, for they have a wonderfully strong digestive faculty and very soft, easily perspiring bodies. Now, to be sure, normal beating of the pulse means health,

faulty beating means sickness, entirely interrupted beating means death. And the way in which to relieve great apoplexy is in fact impossible; moreover, slight apoplexy it is not easy to stop. Thus it is impossible to remove prolonged interruption of the pulse, but short interruption can be cured—not, however, without trouble. Moreover, I recall a prolonged interruption of the pulse one that exceeds the space of two pulse beats; a short interruption one that pauses within the space of two pulse beats. Now sudden death overtakes a person as a result of intermittent pulse beats, just as from apoplexy. For in both cases the heat of the heart is quenched when deprived of respiration." Thus far goes Galen in my aforesaid Epitome.

Amatus: Very well indeed, Laguna, have these statements been made by you, which, in order that our Barbosius and also those present may more readily understand, I shall not hesitate to repeat now myself, inasmuch as whatever is good (as Galen often emphasized, quoting Plato) ought to be repeated two and three times.

Barbosius: There is no surfeit of similar things: continue, continue, Amatus, since these belong to the class of things in which there is such force that the more often and the more accurately they are heard, the more they please us. For these are not common things which in the beginning please by their novelty but when repeated soon become stupid and distasteful.

Amatus: You apply the spur to me even while I run of my own free will (and I use an adage of the Younger Pliny). To resume and to summarize much in a few words, Galen speaks thus: A completely interrupted pulse brings death and the more a pulse approaches this interruption the more it approaches death. Secondly, intermittent pulses are less dangerous to old men, than to boys; most dangerous of all to youths, because it must be believed that from the greatest cause similar pulse beats occur in them. In the third place, Galen questions whether anyone can live with an interruption of the beating of two pulse beats; nay, he seems to assert that it is impossible.

Barbosius: By the immortal gods, if the matter is as Galen believes, how am I alive, since the pulse of my wrist paused for the space of two pulse beats and more and stopped?

Amatus: Galen spoke the truth, Barbosius, for concerning those who are overcome by continual and malignant fevers he said that if a pulse like this occurs in such men it is impossible for them to recover; contrariwise, however, he spoke concerning those who, when they are assailed by illness, are still found to be without fever, as you observed happened in your case.

Laguna: These remarks are very gratifying, Amatus, because they catch Galen's precise meaning. You must beware, however, lest this intermittent pulse of Barbosius be normal to him, not in fact unusual and exceptional.

Amatus: I am quite aware of this fact and all the more so because when Barbosius is well he has a very peaceful and rhythmic pulse, that is, one which has the correct proportion of interval to interval.

Barbosius: Is anyone known of who enjoys favorable and good health with a similar intermittent pulse?

Amatus: To be sure; and Galen mentioned him in that golden book "Concerning Prediction" in the last chapter in which he treats the subject of the steward suffering from disease whose pulse he knew—contrary to the opinion of all the other physicians—naturally stopped and started; and a few days ago we also cured a certain Illyrian monk of a noble order who was afflicted with a malignant fever. His pulse was intermittent and, as we afterwards learned, this was normal for him.

Barbosius: Since, therefore, an intermittent pulse is not natural to me, I beg you to tell me now whence my pulse has acquired this intermission.

Amatus: In relating the causes of intermission of pulse beat, Galen, in the second book "Concerning Causes of Pulses" in the third chapter, speaks thus, briefly: "Not only weakness of faculty induces intermittent pulse but also great obstruction of the organs or compression and constriction, when the arteries can draw nothing straight forward."

Laguna: Galen recalls these words, if I remember correctly, in the second book "Concerning Prediction from Pulses" in the fourth chapter, when he treats this matter at greater length, and it runs thus in my Epitome: "Certain unequal pulses fix their irregularity in one stroke, others in a group of many strokes, which latter in-

equality they call 'collective'; all, however, generally occur either from obstruction or from compression of the organs or from an excess of fluids collected about the faculty or from an irregular intemperateness of the heart; and the irregularity is more distressing which occurs around one pulse beat than that which occurs around a group of beats. Now, indeed, the intermission of the beating of the artery, whether it occurs in one pulse beat or in many, is more dangerous than all other irregularities. To begin, therefore, with the collective intermission, which is clearer, the faculty itself produces intermittent pulse beats either when aggravated or impeded by the thickness or abundance of fluids which obstruct or oppress the arteries or even occupy the regions in which they are wont to be extended. It occurs when an inflammation or a swelling, by attacking the organs that lie near the arteries, restrains their distention. If, however, any such thing attacks the coverings of the arteries themselves greater danger impends; just as the extreme fate occurs if the inflammation invades the organ of the heart. For hearts are suddenly overcome by fainting. But intemperateness of the heart is not equally fatal but is much gentler than inflammation." And so for other details which you will easily be able to run through of your own accord.

Barbosius: From a varied, bad state, therefore, either warm or very cold, or from a mass of obstructing fluids, you have asserted intermittent pulses arise, according to Galen's opinion (as I understand it).

Laguna: That is correct.

Barbosius: From which of these causes, then, has my pulse arisen?

Amatus: In my opinion, from the bad state of a certain excessive fluid which was confined to the regions of the heart and produced the aforementioned unequalness of pulse beat; for in you, as I have often discovered, the noxious fluids do more harm by their state than by their impurity or great quantity; also you especially felt pain in your heart at that time, all of which bear witness to the aforementioned cause, which we immediately got rid of by administering syrups and potions that would take care of the bile that was not dried up and by means of a certain gentler drug. And your pulse beats once more have regained their rhythm and you have been restored to your former state of health.

Barbosius: In those authors whom I have glanced through, if I recall them by grace of a rather retentive memory, I remember that I read that intermittent pulse resulted from fluid troubling to the heart and flowing toward it drop by drop.

Laguna: I do not deny that intermittent pulses can occur from that cause, but, Amatus, in order that we may put a final touch to this cure, I beg you to tell what other irregularities and differences of pulses the intermittent pulse of Barbosius accompanies.

Amatus: I would have told you gladly except that it would have been necessary to move every stone (as the saying goes), that is, to bring forward every theory about pulses. Now, however, it seems to me that I have said more than enough if I should say, with Galen, that slow pulse beats are akin to intermittent: for intermittency of the artery is introduced by the slowness of the pulse and through the same slowness it is restored to its original middle course—as we saw in the case of this pulse of Barbosius.

Laguna: Slow pulse beats are, then, not without danger if they are akin to intermittent beats.

Amatus: Quite true, but interrupted pulse beats are more dangerous than slow ones and closer to death. But we must not overlook one fact, that the rapid pulse is opposed to the slow, just as the pulse that speeds at intervals is opposed to the interrupted pulse; and that the former pulse results from almost the same causes from which the interrupted pulse derives its origin. Yet they differ, because in the pulse that is accelerated at intervals the faculty fights and joins battle with harmful causes, whence such pulses often bring a crisis with them; but in the case of the intermittent pulse the faculty will succumb and is not strong enough to fight against the harmful causes, as Galen said in the aforementioned book " Concerning Prediction from Pulses," in the fifth chapter. I now put an end to these remarks; only you may know that the most normal pulse of the best nature exists as the rule and measure of all others.

Barbosius: In the case of a person who is ill, then, the size and variations of the pulse ought always to be compared to the normal pulse and not to the pulse of the patient himself at a time when he was well and truly in good health.

Amatus: Just so; and Galen in the second book of his " Concerning the Distinguishing of Pulses " agrees to that.

Barbosius: This Galen seems to intimate, for, inasmuch as the variations of the pulses of the sick are infinite, it is necessary, in order to pursue them accurately and to have a true opinion of them, that we refer all pulses to one normal pulse, as the guide and norm, like the most precise statue of Polyclitus; for then, having knowledge of the normal pulse the physicians will easily judge the variations in other pulses, even if they are much or little different from it [the norm] and, too, if they exceed the norm or do not keep pace with it or if all are equal to it in all beats. But, although these remarks are true, I should myself also believe that Galen never denied that those pulses of sick people of which we have knowledge when they were in a state of health ought to be compared not to the normal pulse but rather to their own pulses when they were well.

Amatus: These comments are acceptable, Barbosius, because they have been spoken in accord with Galen's opinion; but inasmuch as we have knowledge of the pulses of few men as they are in a state of health, to which they can be compared when they are ill, for this reason Galen very wisely urged that comparison be made with the normal pulse.

DOROTHEA LYNDE DIX: A NOTE

WINFRED OVERHOLSER, M. D., Sc. D.
Superintendent, Saint Elizabeths Hospital, Washington, D. C.

Among the many tangible links with the past treasured by Saint Elizabeths Hospital, the large Federal mental hospital at Washington, D. C., are several valued mementoes of Dorothea Lynde Dix, that remarkable woman who probably did more to promote the humane care of the mentally ill than any other American.

To delineate adequately the almost incredible accomplishments of Miss Dix is not the purpose of this note, nor could it be done within the bounds of less than a substantial volume. The reader who is interested in the details of her work may be referred to the excellent "Life of Dorothea Lynde Dix," by Francis Tiffany (1890), and to the more recent biography, likewise excellent, entitled "Dorothea Dix: Forgotten Samaritan," by Helen E. Marshall (1937).*

Already retired by reason of ill health from her work of teaching, Miss Dix learned in 1841 of the shocking plight of the mentally ill, most of whom were then confined in jails, almshouses, stables, and kennels, and thereupon determined to ameliorate their lot. During the next forty years she travelled over the Eastern United States, investigating the facts, presenting them irresistibly to Legislatures and securing the establishment of suitable hospitals for the care of the mentally ill. She brought about similar reforms in Newfoundland, the British Isles, and on the Continent. In all, she was directly responsible, almost unaided, for the founding or enlarging of at least 32 mental hospitals in the United States and abroad! She likewise served as Superintendent of Army Nurses in the Civil War.

Among the institutions brought into existence by Miss Dix, and always very close to her heart, was the Government Hospital for the Insane at Washington, D. C., officially known since 1916 as Saint Elizabeths Hospital. She it was who wrote the bill which created the

*For an excellent evaluation of the place of Dorothea Lynde Dix in psychiatric history see also Chapter IX of "The Mentally Ill in America" by Albert Deutsch. Doubleday, Doran, New York, 1937.

institution (funds first appropriated 1852; enabling act passed and patients admitted 1855), who secured its passage, who selected the site and nominated the first superintendent, Dr. Charles H. Nichols. She was a frequent visitor at the Hospital, and until after her death in 1887 a room known as "Miss Dix's room" was reserved for her on the third floor of the Centre Building. Miss Dix was a close friend not only of Dr. Nichols, but of Dr. W. W. Godding, his successor (1877-1899), and is very pleasantly remembered to this day by Mr. Alvah Godding (for many years past the Florist of the Hospital) and Miss Mary Godding, the children of Dr. Godding. She died, at 85 years of age, after six years of confining invalidism, at the State Hospital at Trenton, N. J., an institution founded by her and at which she was an honored guest of the State of New Jersey.

The most valuable memento of Miss Dix in the possession of Saint Elizabeths Hospital is the graceful mahogany desk upon which she wrote the bill creating the Hospital (Fig. 1). This desk, bearing the name-plate

"Presented by
Miss D. L. Dix
1887"

was bequeathed to the Hospital in the following words: "I request Dr. W. W. Godding, or his successor should he not be holding the office of Superintendent over the Government Hospital for the Insane at the time of my decease, to place the mahogany writing desk, now owned by me, and in my apartment, and upon which I wrote that section of the Bill passed by Congress creating the Government Hospital for the Insane of the Army and Navy, during the Administration of President Fillmore, to be preserved in the office of the Board of Hospital Trustees; to be there suitably preserved from injury and unused." The desk stands, as directed by Miss Dix, in the office of the Board of Visitors of the Hospital.

The key to the desk bears a tag on which is written in Miss Dix's hand: "Key of Writing Desk in the room No. 2, 3rd floor ("Miss Dix' room")—Desk on which I wrote section of Bill in recess of the Congressional Library, Capitol, for creating Government Hospital of the Army and Navy."

Other articles found in the desk when it came into the Hospital's possession and now carefully preserved are: Two white quill pens; napkin ring engraved " Miss Dix "; travelling ink bottle with screw

Fig. 1.

Miss Dix's Desk.

top, made of lignum vitae; seal with 39 stars on border, and in circular form " Free Service U. S. Military Hospital," with " D. L. D." in centre; plan (rolled in tin case) of Soldier's Monument erected in the National Cemetery near Fort Monroe in memory of Union soldiers (Fig. 2).

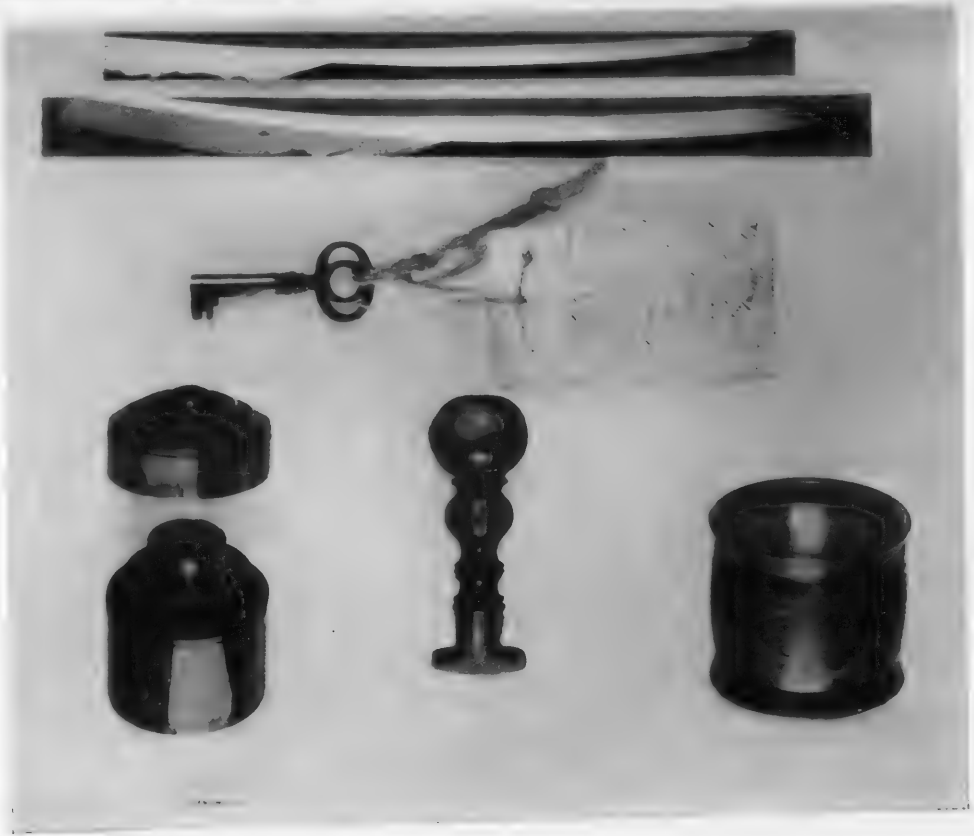

Fig. 2.

Above, two quill pens; centre, key to desk. Below, travelling ink-bottle, seal, napkin-ring.

Through the generosity of Mr. Alvah Godding, Miss Mary Godding and her sister, the late Miss Rowena Godding, the Hospital

Fig. 3.

Miss Dix's Bible.

is also the proud possessor of Miss Dix's Bible, bound in leather and showing signs of constant reading (Fig. 3). The edition is Oxford,

1853, printed in minion 24's. On the inside front cover is a leather label imprinted D. L. D., and written under it, in Miss Dix's hand, "July 1856. London, England" (Fig. 4). Another valued treasure presented by Mr. Godding and the Misses Godding is a tinted miniature of Miss Dix, bequeathed by her to Mrs. W. W. Godding. The

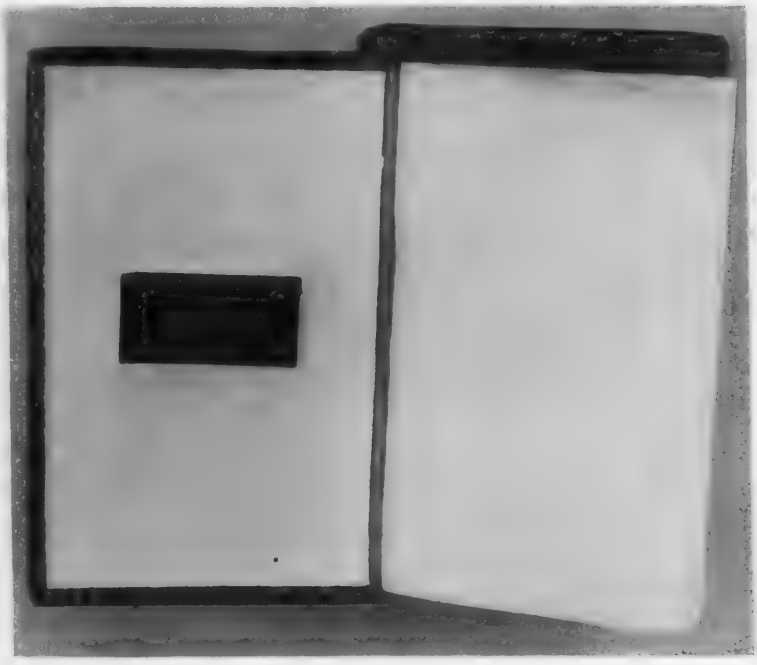

Fig. 4.

Miss Dix's Bible, showing bookplate.

original picture is said to have been taken in 1861, and the copy to have been made in 1879. The pose is the familiar one, and the painting, apparently done on porcelain, is technically fine (Fig. 5).

These mementoes are living evidences of the life and work of Dorothea Lynde Dix, a woman whom Saint Elizabeths Hospital is proud to hail as its founder and creator. Her ideals, expressed in the basic Act, of "the most humane care and enlightened curative treatment" of the mentally ill, were spread by her vigor throughout the

civilized world, yet in so self-effacing a way that to many an educated person her name conveys no clear significance. At the time of her

Fig. 5.

Miniature of Miss Dix

death in 1887, Dr. Nichols referred to Miss Dix as " the most useful and distinguished woman America has yet produced "; that estimate cannot, even at this later date, be vigourously challenged. To all to whom the welfare of the mentally ill is a matter of concern, Dorothea Dix will always be counted in that rare company which includes such other humanitarians as Pinel, Tuke, Conolly, and Beers.

SIR MORELL MACKENZIE
(1837-1892)

SOLOMON R. KAGAN, M. D.,
Roxbury, Mass.

"The introduction of noble inventions seems to hold by far the most excellent place among human actions." —BACON.

Sir Morell Mackenzie was born on July 7, 1837, in England, the son of Stephon Mackenzie, a noted surgeon, who died in 1851 from an accident. Young Morell was for some time a clerk in the Union Insurance Office. He entered the Medical School of London Hospital. In 1858 he was elected member of the Royal College of Surgeons of England. He received his M. B. (1861) and M. D. (1862) from London University. He studied laryngology at Budapest under Czermak in 1859. He was connected with the London Hospital from 1866 to 1873. In 1863 he received the Jacksonian prize at the Royal College of Surgeons of England for an essay on the "Pathology and Treatment of Disease of the Larynx." In 1863 the Hospital for Diseases of the Throat was founded in London largely as the result of his efforts. He rapidly became well known as a skilled operator and the pioneer in Great Britain of laryngology at that time when specialism was rather frowned upon by the orthodox leaders of the profession. He contributed important work on laryngeal tumors (1871). His *Manual of Diseases of the Throat and Nose* (1880-1881) was an epoch-making contribution. In 1887 he was called into consultation at Berlin on the illness of Crown Prince of Germany, afterwards Emperor Frederick III, who eventually died of primary carcinoma of the larynx. In 1888 he published a delicate work *Frederick the Noble*, a popular book which brought upon him the censure of the Royal College of Surgeons of England in 1889.[1] He had been knighted in 1887, and given the grand cross

[1] The illness of the Emperor Frederick III attracted great attention in European medical literature. In connection with Dr. Mackenzie's participation in the treatment of the emperor, it is of interest to present a brief description of the case. The Crown Prince Frederick had suffered from an affection of the larynx since 1886. Professor Gerhard diagnosed a cancer of the larynx, and Professor Bergmann suggested thyrotomy. On May 20, 1887, Sir Morell Mackenzie examined him and stated that there was not sufficient evidence of malignancy. He found

of the order of Hohenzollern. In 1882 he visited the United States where he got a reception by the great American laryngologists. Mackenzie was a man of kindness and modest manners. His following two letters to Dr. Jacob Solis-Cohen illustrate some of his traits:

I

13, Weymouth Street
Portland Place, W.
Feby 6th 1874

My dear Cohen,

Thanks for the draft, and your kind donation to the hospital. I am sorry to hear that you have been threatened by some miserable "Skallywag" (I am not sure about the orthography of this apposite American Term) and am still more sorry that you found it necessary to compromise the matter. Any man who attains to eminence is sure to be occasionally threatened with actions of this sort.

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that a growth was attached to the vocal cords. When he sent a piece of the tumor for examination, Virchow reported that the growth was of a benign nature. Then Mackenzie advised the removal of the growth with forceps and the examination of each portion. On further examination, Virchow stated that the lesion was pachydermia verrucosa. The tumor was treated, according to Mackenzie's advice, by endolaryngeal extirpation with forceps. Later a swelling below the middle of the left cord developed. Professor Schrötter of Vienna made the diagnosis of cancer and recommended the excision of the entire larynx or a paliative tracheotomy. On February 1888 Dr. Bramann performed a tracheotomy to relieve dyspnoe. Afterwards Professor Waldeyer found parts of cancerous tissue in the sputum. The Emperor died on June 15, 1888. Dr. Lionel Colledge of London states that the cancer was subglotic, and the tumor was spreading below the cords, although the attendant surgeons had focused their attention mainly on the cords themselves. He believes that Schrötter's suggested operation of total laryngectomy might have saved the patient's life, but the Emperor refused to undergo such operation. According to Colledge, Gerhard and Bergmann correctly diagnosed the case as cancer, but failed to understand the extent of the lesion. Mackenzie removed pieces by the indirect method when the tumor was subglotic, and this condition resulted in misleading pathological findings. Dr. Jacob Solis-Cohen performed in 1867 the first successful operation of cutting into the larynx to remove a cancerous growth. He stated that his operation would have saved the Emperor Frederick's life. For references see Sir Morell Mackenzie: *A Manual of Diseases of the Throat and Nose*, London, vol. I, 1880; Von Bergmann, Gerhardt, Schrötter and others: *Die Krankheit Kaiser Friedrichs des Dritten*, Berlin, 1888; Lionel Colledge: "The Laryngeal Disease of the Emperor Frederick," *The Journal of Laryngology and Otology*, London, Jan., 1936, vol. LI, No. 9, pp. 31-35; S. R. Kagan, "Biography and Bibliography of Jacob da Silva Solis-Cohen," *Medical Life*, Aug., 1937, pp. 292-293.

I was myself once threatened with an action, but I told the individual to go to a warm place, where I believe there is no "locus stande" for actions at law, and I heard nothing more of it.

I am very pleased to hear that you are so soon going to bring out a second edition of your book; I shall look forward to it with great interest, and hope you will send me one of the earliest copies. My wife joins me in kindest regards, and with every wish for your continued success,

Believe me

Yours most truly,

Morell Mackenzie.

II

19 Harley Street
Cavendish Square, W.
Nov. 3, 1882.

My dear Cohen,

I take an early opportunity of writing to thank you *for all* your kindness to me at Philadelphia. I shall look back with the greatest pleasure on the charming dinner of the 'Philadelphia Laryngological Society' and your splendid reception afterward.

You may have observed that in speaking of your excellent paper I made use of the term gylology which we discussed together. If you recollect I told you I thought it should be gulology and that was my objection to the word as it might give rise to some disagreeable chaff bearing on the word gull. You got over this by changing the *u* into *y*, but the fact (which I forgot at the time though I knew there was a reason for my position) is that gula is purely a Latin word and has no more direct connexion with Greek than a conjectural derivation from the word γυαλον which means a hollow. Another derivation is from γευμα — I taste although gula has been used loosely for the neck re by Cicero and others, the Latin Medical writers always restrict the word to the technical signification of gullet which is no doubt derived from it. Such a word moreover as gulosus a glutton sufficiently shows that gula even in popular language never quite lost its stricter meaning of food—passage. The only words that I can find at all suitable for our purpose are 1st trachelology, and 2nd laemology—The former derived from Τραχηλος has the disadvantage of a too "learned length"—and besides its resemblance to "trachea" renders it liable to the same objection as "laryngology" itself. "Laemology" on the other hand (from λαιμος — throat in general) is exact and sufficiently euphonious. The sole objection I can see to it is its unfamiliarity, but I dare say the profession even in England might in time be educated up to it. At any rate the word is a sound one, has the sanction of

Hippocrates and has the advantage of meaning precisely what we wish to express. I hope therefore you will approve of it and use it.

With kindest regards and repeated thanks

Believe me

Yours truly

Morell Mackenzie.

P. S. I hope Mrs. Cohen is keeping well; please remember me very kindly to her. I should be much obliged if you would let me know the exact title of the book on the Health Resorts of Florida re which you were kind enough to put into my bedroom.

Mackenzie died of asthma at London on February 3, 1892, at the age of sixty.

MEDICO-HISTORICAL NEWS AND ACTIVITIES

THE FALL MEETING OF THE AMERICAN ASSOCIATION OF THE HISTORY OF MEDICINE

CLEVELAND, OHIO, OCTOBER 7, 1940

Every organization tends to build up a tradition, and our American Association of the History of Medicine is no exception to this law. To meet every year in Atlantic City is one of our traditions, and there are good and sound reasons for it. Yet the membership of our Association is ever spreading, new constituent societies in various states have joined, and it had been felt that some opportunity to meet in other parts of the country would be desirable. Hence it was decided in 1939 that a second meeting should be arranged whenever possible. Not long afterward an invitation was received to convene in Cleveland, Ohio. The invitation was gratefully accepted and the date for the First Fall Meeting of the American Association of the History of Medicine under the auspices of the Ohio Committee on Medical History and Archives was set for October 7, 1940. This was a new experiment in the life of the Association. Would it succeed? Those who knew Dr. Dittrick had little doubt. And when the program was announced and the names of the sponsoring committee and of the speakers became known, it was felt that everything had been done to assure us of a pleasant, interesting, and stimulating day. All further responsibility rested with the guests. Would they respond in sufficient number and make the efforts of the sponsors worth while?

Those interested in the past like to be surrounded by its memories. A museum of medical history is an ideal meeting ground for medical historians and the museum housed in the beautiful Medical Library, 11000 Euclid Avenue, is one of the biggest and best arranged collections I have ever seen. A description of the Cleveland Collections was just being published in the October number of the *Bulletin* and reprints were presented to the members present. Here in the Museum, among old surgical instruments, microscopes, fetishes, pharmacy jars, etc. the meeting was called to order at 9 a. m. by Dr.

Dittrick, using a gavel whose wood hailed from the birthplace of Ephraim McDowell.

Unfortunately, none of the officers of the Association could be present at the scientific sessions. Dr. Long, our president, had been delayed, but fortunately arrived in time to preside over the dinner session. Our secretary, Dr. Sigerist, was in the hospital from where he had wired his greetings; his absence was noted with regret and a telegram sent to him. Free of the more rigid formalities of a Council meeting and of a business session which were reserved for Atlantic City, Dr. Dittrick adopted a custom usual at the International Congresses of the History of Medicine. After having presided over the first morning session, he yielded the chair to Dr. Russell, Buffalo, N. Y., for the second morning session. Dr. Forman, Columbus, O., and Dr. Kiser, Indianapolis, Ind., presided over the afternoon sessions, using the same gavel which Dr. Dudley P. Allen had held in 1893 when presiding over the Ohio State Medical Society, and which had been given by Dr. H. L. Sanford. Dr. Tucker, Cleveland, O., and later on myself acted as secretaries of the meeting.

The morning sessions, opened with an address of welcome by Dr. Clyde L. Cummer on behalf of the Cleveland Medical Library, were devoted to papers on various aspects of medical history, while the sessions of the afternoon were filled with demonstrations based on the resources of the museum, the library, and private collections. It is to be regretted that the papers could not be published at full length in the *Bulletin*. However, it would have been too heavy a burden for the *Bulletin* to print the entire transactions of two meetings in the same year and we had, therefore, to limit ourselves to short abstracts. Having been asked by the editor to take care of the editorial work for the present report, I wish to express my gratitude for the cooperation of the speakers who let me have their abstracts.

It is hardly necessary to say that the reading of papers is only part of the function of a meeting. The exchange of ideas on scientific topics and of experiences about teaching, collecting, etc. are of equal importance. This unofficial part of the program requires the presence of a sufficient number of members. One glance at the list of participants was completely reassuring. There were many old acquaint-

ances from Atlantic City and it was a great pleasure to meet colleagues from many states all interested in medical history. For the response to the meeting had extended far beyond Ohio and the states in the immediate neighborhood: I have counted representatives from at least eight different states and Canada. Our hosts provided opportunities for conversation and exchange of ideas outside the meeting room. At luncheon we were the guests of the Cleveland Committee and in the late afternoon we assembled at the home of Dr. Haden where cocktails greatly helped the tongue to say what the brain was thinking. And when the dinner session was over we all felt that a most successful meeting had come to its end.

Yes, the Fall Meeting in Cleveland undoubtediy was a great success, and for this we have once more to thank the sponsoring committee with its chairman, Dr. Dittrick, and their charming ladies. But it was more than a stimulating and delightful convention. It proved that a second meeting is not only desirable but possible too. Thus it has set an example for future similar meetings and shown how the activities of our Association can be increased throughout the country and with them the interest and enthusiasm for the history of medicine.

OWSEI TEMKIN.

ABSTRACTS OF PAPERS

CLYDE L. CUMMER, President: *Welcome to the American Association of Medical History from the Cleveland Medical Library Association.*

In welcoming you here today, there is a temptation almost impossible to resist. Because you are historians, I feel the urge to tell you about the history of this Western Reserve of ours, this tract of three million acres in northeastern Ohio, of how it was settled by New Englanders, of its early educational institutions, strongly under the influence of New England custom and tradition, and of its early physicians. However, you are interested in medical history rather than local general history, and I shall desist. You may be curious about our Cleveland Medical Library Association, which I represent today in welcoming you. It was started in 1894. The guiding spirit was Dudley Peter Allen, a son of the Western Reserve, whose father and grandfather had cared for the medical needs of two generations of the early settlers. Dr. Allen had had his medical training at Harvard and the Massachusetts General Hospital, and had there come under the influence of the

Boston group. It was natural then that this library in its corporate form should be patterned after the Boston Medical Library.

Another of our founders was H. Kirke Cushing, a father of Harvey Cushing and Edward F. Cushing, of a distinguished line of physicians. In fact, there has been a Doctor Cushing in Cleveland almost since there has been a Cleveland. Harvey Cushing took keen interest in our organization, aiding it in many ways, and delivering the dedicatory address when this building was opened in 1926.

One of our earliest presidents and our greatest student of medical history was Henry Handerson, another native son of Western Reserve. The outbreak of the Civil War found him a young man, as a tutor in a Southern family in Louisiana. Conviction led him to support the Southern cause and he enlisted in the Confederate army, returning to Cleveland at the close of the war. He translated into English the classic Baas's History of Medicine.

To these founders memorials have been provided in this building, which we hope you will inspect during your visit.

While all of us had been interested in medical history to a greater or lesser degree—and I fear often less than more, for it was felt that the most of resources and energies should go into building up a great work library—, it remained for Dr. Howard Dittrick to really develop a museum which became a magnet to attract more and more items of great historical value. We appreciate greatly what he has done, for without a knowledge of medical history we are but as "children in the depth of ignorance" about modern medicine and its background. We are truly grateful to you for coming here to encourage Dr. Dittrick and all the rest of us, and hope that your visit will be as pleasant and helpful to you as we know it will be to us. We welcome you most cordially.

BRUNO MEINECKE: *The Medical Conceptions of a Roman Layman.*

All of the available evidence supports the belief that most Roman laymen of education and discernment esteemed the art of medicine most highly, and regularly sought the advice of reputable specialists and general practitioners, both as a preventive measure and for proper treatment. They consulted their physicians to learn from them the basic rules of health which are concerned with food and drink, fresh air and sunlight, physical exercise, warmth, cleanliness, mental and physical relaxation and rest. Among other Romans Cicero showed his high regard for the physicians of his day when he wrote, "In no function do human beings approximate the gods more closely than in bestowing health upon their fellowmen."[1] In his works occur numerous references to health and hygiene, to various fields of medicine which today would be classified under therapeutics, pharmacology, surgery, phys-

[1] Lig. 38.

ical therapy, gynecology, pathology, psychology, psychiatry, anatomy and physiology.

Cicero at the age of twenty-seven seems to have been a veritable "Schwindsuchtskandidat." He describes [2] his physical condition at that time in language strongly suggestive of pulmonary consumption. Consequently after consulting with his physician he decided to replenish a weak constitution by taking a vacation abroad. Herein the orator conformed to the treatment for consumptives as laid down by Celsus,[3] namely, respite from business, sea voyages, change of climate, proper diet and rest.

Elsewhere [4] he says that medicine is such a noble profession that men have ascribed its origin to the gods. However, the sick should not suppose that Aesculapius or Serapis or Minerva Medica prescribe a regimen of health through an interpreter of dreams, but through the medium of a physician; [5] for "individual health is preserved by a knowledge of one's own constitution, by observing what is regularly hurtful or helpful, by self-restraint in all matters of diet and physical hygiene, and finally by the professional skill of those to whose knowledge these principles belong." [6]

Cicero shows further penetrating insight into the problem of mental health. The mind rules the body—*mens regit corpus*,[7] and this is in good health when its judgments and beliefs are in perfect accord.[8] There are four emotional disturbances or psychoses, *animi perturbationes*: "worry," *aegritudo*; "fear," *formido*; "passion," *libido*; "uncontrolled pleasure," *laetitia*.[9] Mental psychoses are irrational; hence they are best treated by the application of reason.[10] Mental therapeutics are as varied as the aberrations themselves,[11] and in this particular Cicero gives advice exactly as pertinent as any that could be given today: *sanabimur si volemus*.[12]

In summa, Cicero held medicine to be both an art and a science; [13] he believed that its essence consisted in doctrines and principles which are based upon a systematic body of knowledge which those whom we call doctors must learn and practice; [14] that medicine is the art of health, just as prudence is the art of living; [15] that sickness and disease are the antithesis of health,[16] and that, when men are ill they engage the very best physician; [17] that dis-

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[2] Brut. 91, 313.
[3] De Med. III, 22.
[4] Tusc. III, 1, 1.
[5] Divin. II, 59, 123.
[6] Off. II, 24, 86.
[7] Rep. VI, 24, 26.
[8] Tusc. IV, 13, 30.
[9] Fin. III, 10.
[10] Tusc. IV, 27, 58.
[11] Tusc. IV, 27, 59.
[12] Tusc. III, 13; IV, 29 and 30.
[13] Fin. V, 6, 16; Off. II, 4, 15; Tusc. III, 1, 1 et ita saepe.
[14] Divin. I, 7, 13; De Or. II, 9, 38; Divin. II, 5, 13; Off. I, 18, 60.
[15] Fin. V, 6, 16.
[16] Tusc. III, 4, 9.
[17] Cluent. 21, 57.

eases may be acute or chronic, slight or severe, curable or incurable;[18] that the physician cannot apply the proper therapeutics without a correct diagnosis;[19] that nature provides remedies such as the science of dietetics, physical exercise, medicinal springs and herbs;[20] that chirurgery, including massage and cautery, are variant remedies.[21] Thus wrote and spoke a Roman layman in the first century before Christ.

W. HARRY ARCHER: *Davy, Faraday, Hickman, Long, Wells, Morton, Jackson and the Discovery of Anesthesia.*

Sir Humphry Davy, Michael Faraday, Henry Hill Hickman, Crawford W. Long, Horace Wells, William T. G. Morton and Charles T. Jackson have been accorded varying degrees of credit in connection with the discovery and introduction of anesthesia.

Several times during his experimental inhalation of nitrous oxide, Sir Humphry Davy noted that headaches were temporarily eased and that the pain of an erupting wisdom tooth was allayed. It was these observations which lead him to write in his book on Medical Vapors: " As nitrous oxide, in its extensive operation, appears capable of destroying physical pain, it may be used with advantage during surgical operations in which no great effusion of blood takes place."

This is Sir Humphry Davy's rather remote connection with the discovery of anesthesia.

Michael Faraday wrote in 1818: " When the vapor of ether is mixed with common air and inhaled, it produces effects very similar to those occasioned by nitrous oxide. By the incautious breathing of ether vapor, a man was thrown into a lethargic condition which, with a few interruptions, lasted for thirty hours."

It is difficult to ascertain where Faraday's work aided in the discovery of anesthesia.

Henry Hill Hickman, satisfied from his experimental work on carbon dioxide that his method was ready to be tried on human subjects, gave a full account of his investigations in a letter to his friend, T. A. Knight, asking him to present his work for consideration of the Royal Society. Hickman's plea for the support of this society in further investigation of what Hickman called " Suspended Animation "—with the view of ascertaining its probable utility in surgical operations on the human subject, was never brought to the attention of the members of the society at a meeting.

Truly Hickman was the first to conceive the idea of inhalation anesthesia

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[18] Fam. XVI, 8, 1; Cato, 19, 67; Tusc. V, 1, 3.

[19] De Or. II, 44, 86; Tusc. III, 10, 23; Fat. 8, 15.

[20] Tusc. III, 3, 6; Off. II, 24, 86; Off. I, 30, 106; Cato 11, 36; Fam. IX, 18, 3; Att. IX, 7, 7; Fam. IX, 12, 1; Nat. Deor. II, 53, 132 and 64, 161

[21] Att. IV, 3, 3; Tusc. II, 15, 36 and III, 6, 12; Sest. 65, 135; Fam. XVI, 18, 1.

but he failed to carry out his ideas to their ultimate conclusion, the practical demonstration of the alleviation of pain for man during surgery.

In 1842 a young physician, Crawford W. Long, of Georgia, conceived the idea that possibly he could give a patient sufficient ether to inhale so that he could operate without pain. In four years Long administered ether four different times, and then stopped. It is quite apparent that Long was not impressed with the idea that he had made a discovery of great importance for he made no effort to introduce the method into his general practice, nor did he write on the subject, demonstrate it or lecture on it before any medical society.

Horace Wells gave considerable thought to the subject of pain relief during extractions and discussed this subject with chemists and physicians of his town. He attended a lecture on chemical phenomenon by G. Q. Colton, traveling chemist, on December 10, 1844. As part of his demonstration, Colton manufactured some nitrous oxide, and to amuse the crowd invited spectators from the audience to come forward and inhale the "laughing gas fumes." When this part of the lecture was reached, Wells, in the audience, observed that no sign of pain was exhibited when the volunteers under the "laughing jag" of the gas stumbled around the stage and scraped their shins on heavy benches. Immediately there crystallized in the mind of Wells the idea of inhalation anesthesia. Wells had an aching tooth and felt that by inhaling sufficient nitrous oxide he could have his tooth removed painlessly. Colton objected, as he was fearful that the inhalation of such a large quantity of gas might result fatally. Wells, however, had the courage of his convictions and persuaded Colton to bring the gas. On December 11, 1844, Wells sat in his operating chair and held the bag of gas which he inhaled until he lost consciousness. Then his friend and former pupil, John Riggs, stepped forward and extracted the aching wisdom tooth.

For several weeks following his discovery, Wells experimented with the gas, and, desiring to acquaint the world with this release from surgical pain, he hastened to Boston, the medical center of the New England States, where he lectured on and demonstrated nitrous oxide before the senior medical students of John C. Warren.

William T. G. Morton studied dentistry under Horace Wells. Following the lecture and demonstration by Wells on nitrous oxide, Mortan gave considerable thought to the subject of pain relief and began to experiment with ether for this purpose. Finally he was ready to try to extract teeth while a patient was under the influence of a disguised ether compound. On September 30, 1846, he successfully anesthetized one of his patients and extracted an aching tooth.

On October 16, 1846, in the surgical amphitheater of the Massachusetts General Hospital in Boston, he gave the first public demonstration of ether anesthesia.

The fame of the wonderful new agent and of its discoverer spread rapidly and then came Charles T. Jackson, jealous of the fame of Morton and anxious to participate in the benefits of the discovery, with a claim as to his rights in the discovery. He had suggested the drug to Morton, and claimed he had advised him about its nature and about the best methods of its administration.

Jackson based his claim on the fact that as early as 1841 he had discovered that the antidote for the accidental inhaling of chlorine fumes was the inhalation of ether. Having had to resort to this ether treatment on several occasions he "discovered that the nerves of sensation could be and were paralyzed to all sensations temporarily and safely, by the inhalation of ether vapor."

The American Medical Association and the American Dental Association have both adopted resolutions in which Dr. Horace Wells, Dentist of Hartford, Conn., is acknowledged the Discoverer of Anesthesia.

EDGAR F. KISER: *Amos Twitchell's Copy of Beaumont's Experiments.*

The writer describes a copy of Beaumont's Physiology of Digestion which was the property of Amos Twitchell, who was contemporaneous with Beaumont. Twitchell, a graduate of Dartmouth and a close personal and professional friend of Dr. Nathan Smith, is remembered particularly because of his having first successfully tied the common cartoid artery for secondary hemorrhage.

His copy of Beaumont was one of the Lilly and Waite edition which is considerably scarcer than the Plattsburg. The book bears Twitchell's signature and the price paid, two dollars, is inscribed on the fly leaf.

The volume is annotated throughout with such comments as "true," "note," "nonsense," etc., and some pages bear entire sentences, many of them controversial. All of the inferences are discussed and in a few instances in which Twitchell disagrees with Beaumont, Twitchell's view is correct, as evaluated in the light of present day views on the physiology of digestion.

So far as the writer knows, there is no other copy of Beaumont extant which bears complete annotation by one of his prominent contemporaries.

LOUIS S. DEITCHMAN: *The Earliest Medical Printing.*

The essayist discussed the book "De Universo," also erroneously named "De Sermonum Proprietate," by Hrabanus Maurus (776-856), Hain-Copinger 13669, Osler 1. This book was, until recently, considered as the first book with a definite chapter on medicine, and the accepted date of the book was "before July 20th, 1467."

The date is based on a written entry in a copy at the Paris Bibliothèque Nationale. Sir William Osler, in his "Incunabula Medica," published in 1923, placed this book, chronologically, at the head of his list and the date

1467 has not been seriously disputed until 1938, when Arnold Klebs published "Incunabula Scientifica et Medica." Dr. Klebs gives the date as (1474?).

Since the publication of Osler's work, a number of bibliographical discoveries were made which affect this book. The "R-Printer," who printed "De Universo," and whose printing activities were accepted as covering the years 1464 to 1478, was proven to be Adolph Rusch, who printed between 1470-1479.

Furthermore, the dates of two of the four large folio volumes, considered as the earliest products of the R-Printer, and of the same format as "De Universo," and until recently accepted as 1464 and 1470 respectively, were proven to have been printed after 1470 and 1472.

Also it is not an accident that several books of that period bound together with copies of "De Universo" are works printed after 1470.

Dr. Klebs promises to give his reasons for the date (1474?) in the next issue of his book. On the other hand, Dr. Victor Scholderer of the British Museum accepts the date 1467 as does the Berlin *Komission für den Gesamtkatalog der Wiegendrucke.*

Taking the above evidence into consideration, and with all deference to Dr. Scholderer and the Berlin Komission, the date 1467, resting as it does on one written entry, in the Paris copy, would not seem entirely conclusive.

It will be interesting to see what Dr. Klebs has up his sleeve.

NELSON G. RUSSELL, JR.: *James Platt White, First American Clinical Teacher of Obstetrics.*

In 1850 an article condemning Dr. James P. White, Professor of Obstetrics in the Buffalo Medical School, appeared. The article stated, "A Demonstration of obstetrical practice consuming at least 8 hours has been made before a class of senior students. . . . I look upon it as an attempt to build up a reputation entirely unworthy the sacred cause of science." The Buffalo Medical Journal had commended Dr. White's innovation and challenged to a free combat. The reply to this challenge is the alleged libel.

The defense stated, "The exposure of a woman in labor was not only a startling and bestial innovation, but without a particle of utility. . . . We expect that you will by your verdict vindicate the delicacy of the sex and the honor of a profession."

During the trial each of the students present testified, and several prominent medical men appeared for the prosecution. Many Buffalo physicians testified for the defendant that in teaching it was neither necessary nor proper to expose the patient.

The charge to the jury said, "Beauty, delicacy, modesty and virtue cannot save their possessors from disease, pain and death." It appeared that Dr. Loomis, the defendant, had not written the article but had caused it to be reprinted and distributed as handbills, and the verdict was "Not Guilty."

Doubts as to the justification for this method of teaching were so widespread that it was referred to the Committee on Medical Education of the American Medical Association. They reported that the only advantage that could be gained by exposure of the patient was greater facility in protecting the perineum; but held that this did not compensate for the disadvantages, as they considered that a physician who is not prepared to conduct labor by the sense of touch alone, is not competent to practise obstetrics. While this point of view seems almost inconceivable ninety years later, due credit must be given Dr. White for instituting obstetrical teaching as we now know it, and for having the courage to brave the opposition and indignation of his day.

DAVID A. TUCKER, JR.: *Daniel Drake, Pioneer Medical Educator of the Middle West.*

In 1832 Daniel Drake published a small book entitled "Practical Essays on Medical Education And The Medical Profession, In The United States." in which he outlined his philosophy of medical education.

The titles of the seven essays which comprise the book are as follows:

I. Selection and Preparatory Education of pupils. II. Private Pupilage. III. Medical Colleges. IV. Studies, Duties, and Interests of Young Physicians. V. Cause of Error in the Medical and Physical Sciences. VI. Legislative Enactments. VII. Professional Quarrels.

The first essay begins as follows:

"Of the various occupations in society, scarcely one requires greater talent and knowledge, than the medical profession." Continuing Drake points out that for the successful study of Medicine it is necessary to have "sound health," a vigorous and inquiring mind, ambition, perseverance and industry. He calls attention to the defective education of the majority of those who desire to study medicine, and even asserts "that the majority of the profession in America, are deficient in common school learning," that is "spelling, grammar, etymology, descriptive geography, general history, the art of composition, algebra, geometry and mechanics." To a "familiar acquaintance" with these subjects Drake would add "a competent knowledge of the elements of physical geography, general history, the art of composition, algebra, geometry and mechanics." This knowledge ought to be acquired says Drake before beginning the study of Medicine.

In the second essay "Private Pupilage" the choice of preceptors is discussed. "It is not necessary" says Drake "that the preceptor should be a man of genius; but it is indispensable that he should possess a sound and discriminating judgment, otherwise he will be a blind guide." Drake objects not only to the fact that "the youth of the United States are put to the study of Medicine at improper ages" (as early as 15 or as late as 25) but that the period of study is too short. In addition to medical studies it is advised that

the medical student devote some time to English grammar, Physical geography, Outlines of History, The Elements of Mathematics and Philosophy, the French language, and finally Latin and Greek. Drake complains that too often the medical student is left to his own devices in selecting the sequences of studies. The author insists that medical studies should begin with Chemistry, and proceed to Anatomy and Physiology. Botany, Zoology and Mineralogy ought to be studied as an approach to Materia Medica. With such knowledge the student can carry on successfully Pathology, Physic and Surgery. Of Obstetrics the following is stated: "This department of the profession is emphatically a compound of Physic and Surgery, and on this account no less than many others should be the last which a pupil studies." Concerning clinical studies, Drake remarks: "It is the duty of the preceptor, when his pupil is prepared for clinical observations, to select for him such cases as will be profitable. The DIAGNOSIS of diseases presents many difficulties and can be successfully studied only at the bed side. To introduce a student indiscriminately to all cases, is more likely to confuse than enlighten his mind. He should first study those which present a well defined character, and proceed gradually to the more obscure and complicated.

In the third essay on "Medical Colleges" note is taken of the number of colleges in the United States, and of the rapid "annual" increase in this number. He advocates a graded course, so that students, beginning and advanced, should not be admitted to the same lectures. The sessions are considered too short being but two or three months in some instances, and ought to last at least six months. Four lectures a day only should be given as few students can adequately digest the content of more.

In Essay VI—"Legislative Enactments" Drake expresses his views concerning the legal status of Medical Schools. There are several items which ought to be considered, states the author, when a State is about to institute a Medical School: "A Hospital is a necessity. Supplies for the anatomical hall should be obtained by placing in the hands of the medical faculty the bodies of persons dying in the hospitals, poor house, and jails that are not claimed by relatives. The trustees should be chosen for their qualifications with reference to the duties which they must discharge impartially and with a view solely to the public good."

SAVAS NITTIS: *The Last Illness of Jesus.*

T. G. H. DRAKE: *Early Medical Caricatures.*

As stated by Laignel-Lavastine in his Preface to Weber's "Tableau de la Caricature Médicale," "Medical caricature shows us medicine, its evolution, its discoveries and its failures from the patient's standpoint, medicine as seen by the sick." The 18th century in England ended in an orgy of caricature, many examples being of medical interest. These caricatures were engraved

upon copper plates and the prints were hand finished in bright water colours. The great names in English caricature of the late 18th and early 19th century were those of Gillray, Rowlandson and George Cruickshank. The legend on a Rowlandson print states, "Price one shilling coloured." Another speciment, in addition to the publisher's name, advises, "Folios of Caricatures lent." Coloured slides of examples in the author's collection which are not illustrated by either Holländer or Weber were shown.

DEMONSTRATIONS

HAROLD N. COLE: *Venereals.*

Dr. H. N. Cole presented a small collection of venereals, containing two incunabula: Leonicenus, Nicolaus, "Libellus de Epidemia, quam vulgo morbum Gallicum vocant." Venice, Aldus, 1497, and Steber, Bartholomeus, "A Morbo Gallico," Johann Winterburg, 1497-1498.

The sixteenth century was particularly well represented, and included a first edition of Fracastorius, Hieronymus, "Syphilis sive morbus Gallicus," Verona, August, 1530, and of Hutten, Ulrich von, "De Guaiaci medicina et morbo Gallico," Joannis Scheffer, 1519. There was also a unique booklet, "La grosse Verole," author unknown, Paris or Lyon, around 1500.

Several of the books in the collection have the bookmark of the French syphilographer, Fournier, and several bear the imprint of J. K. Proksch.

OTTO GLASSER: *Exhibit on the History of X-Rays.*

The complete exhibit was divided into four sections. The first section contained collections pertaining to Wilhelm Conrad Roentgen, including original photographs of Prof. and Mrs. Roentgen, some of the letters they wrote to friends and relatives, and script money with Roentgen's picture, which was issued in Lennep and Weilheim. Among the letters was one written by Mrs. Roentgen to a cousin shortly after the discovery of the roentgen rays. It is a remarkable document showing how the great discovery was reflected in the everyday life of the Roentgen household.

The second section of the exhibit included original x-ray pictures made by Roentgen and photographs of various important documents connected with the discovery.

A series of early x-ray tubes used in 1896 and a replica of the tube which Roentgen used when he discovered the rays were contained in section three.

The last part of the exhibit consisted of a collection of early dosemeters of roentgen rays, such as the Sabauraud-Noire pastille, the Holzknecht and Hampson quantimeters, the Kienboeck quantimeter and the Schwarz Kalometer.

ROBERT G. PATERSON: *Medical Organization in Ohio.*

Medical organization in Ohio divides itself naturally into four periods:

(1) Legal Convention Period 1811-1833.
(2) Voluntary Convention Period 1835-1851.
(3) Ohio State Medical Society 1848-1902.
(4) Ohio State Medical Association 1902 to date.

The demonstration today relates to the first period. So far as we can discover there were six state meetings provided by law between 1811 and 1833.

The first meeting was held at Chillicothe, Ohio, November 2, 1812. A quorum of ten was required. Only five members attended.

On June 4, 1821, "The Medical Convention of Ohio" met at Columbus, Ohio. So far as discoverable no printed proceedings of this meeting were issued. There are brief contemporaneous accounts in newspapers published at Chillicothe and Worthington, Ohio.

The next meeting was held at Columbus, Ohio, December 10-12, 1827. It was styled "General Representative Convention of the Medical Societies of the State of Ohio." A record was made and printed as "The Proceedings of the Medical State Convention" which contains a constitution as adopted. This eight page leaflet is the first record of medical organization in Ohio, and so far as we can ascertain it is the only copy extant. It is in the possession of the Ohio Committee on Medical History and Archives.

A fourth meeting was held again at Columbus, Ohio, January 5-9, 1829, under the name "General Medical Society of the State of Ohio." The printed record of the meeting has the title "The Proceedings of the General Medical Society." There is included a copy of the constitution as amended.

The fifth and sixth meetings were held in Columbus, January 3, 1831, and January 7, 1833. No printed proceedings of these meetings have been discovered to date. We are led to believe that a printed record of the meeting in 1831 was made because in the next period of medical organization, namely the voluntary convention period held in Columbus, Ohio, January 5-7, 1835, we find the following:

"On motion of Dr. Kreider, Resolved, That the digested code of Medical Ethics published in the proceedings of the General Medical Society of Ohio, in the year 1831, be published in the proceedings of this convention."

The Ohio Committee on Medical History and Archives is on the hunt for any of the printed proceedings of these six meetings which may be in existence.

A. B. BRUNER: *Postage Stamps.*[1]

[1] Cf. Dr. Bruner's article on "Doctors and Philately" in *Scott's Monthly Journal*, Vol. 21, No. 9, November, 1940, pp. 313-314.

RUSSELL L. HADEN: *Microscopes (Demonstration).*

EDWARD H. CUSHING: *Nicolas Pol Collection.*

The Cleveland Medical Library acquired some years ago thirty-five to forty volumes of late 15th and early 16th century medical classics with the inscription 'Nicolaus Pol, Doctor 1494' on the inner covers. Most of these books also have "Collegiatae Eccliae Inticensis, 1632" on the first page. Some facts concerning the life of Nicolaus Pol were presented and the one pamphlet written by him in 1517 on "The Cure of Syphilis by Guiacum" was shown. The location of the Collegiate Church at Innichen (renamed San Candido) was shown on a 16th century map. The difficulties concerned in searching for accurate information about the life of this man and the library at the Stiftskirche at Innichen were presented.

HOWARD DITTRICK: *The Museum Collections of the Cleveland Medical Library.*

We who work in the Museum are reminded continually, by the numerous relics that give flavor to our possessions, of the inspiration which gave it birth. Dr. Dudley Peter Allen, who died in 1915, was third in succession in an illustrious medical line whose lives and work ran through the entire historical period of the Western Reserve. Dr. Allen had deposited in the old medical library building the nucleus of this collection, sensing the appreciation of subsequent generations for this record of pioneer medicine in the Western Reserve. The material deposited included instruments and equipment of his father and grandfather, with other objects pertinent to the early practice of medicine along wilderness trails.

Parallel with the Allens ran five generations of Cushings, a brilliant and eminent medical line, of which the late Dr. Harvey Cushing was a member. Successive generations of Cushings have enriched our collections with material which represented the finest procurable for the profession during their lifetime.

Upon the foundation of Dr. Dudley Peter Allen's deposited material we have built up slowly but steadily a collection derived almost entirely from the enthusiastic efforts of friends of the Museum who have themselves deposited here their treasured relics of medical progenitors, and who have cast an acquisitive eye on the hoarded relics of friends, relations and patients. Such material as was purchased was practically all underwritten by the unfailing generosity of Cleveland physicians. An annual budget has financed current expenses and purchased some cases. The work has been entirely voluntary.

The Museum has endeavored to provide through its collections a record of local pioneer medicine, and to expand the local field represented by a suggestion of the centuries of medical history which lie behind the work of these

pioneers. We hope to express the age-old struggle of medicine, through trial and error, toward scientific truth.

The fields represented by the collections are outlined in the reprint so generously provided and financed by our parent organization, the American Association of the History of Medicine. The beautiful programs are also from that source, a visible reminder of the work of Dr. Sigerist, editor of the *Bulletin of the History of Medicine*, in the October issue of which the Cleveland collections in the field of medical history will be described. We feel a distinct loss in the absence of Dr. Sigerist today, since this meeting was arranged at his suggestion. You have heard that he is sojourning in a hospital in Baltimore.

Without further explanation we will proceed to the brief demonstration of exhibited material, after which we hope time will permit closer examination of things along the line of your own special interest.

AFTER-DINNER ADDRESSES

HUGH STALKER: *Autographed Letters of Some Famous Physicians.*

From a collection of autographed letters of medical men which is to be left to the medical library of Harvard University, several letters were presented and very brief biographies of the men represented were read. These dated from John Hunter's letter of 1760, through several New England families closely linked with the growing up of Boston and its medical life, included Pasteur and Lister, and ended with the much beloved Sir William Osler.

LOGAN CLENDENING: *Memorials of Medicine in America.*

This talk centered around lantern slide pictures which had been accumulated during the travels of the speaker, and all of which represented some object of medical historical interest in North America.

1. The Hospital of Jesus of Nazareth in the City of Mexico, the oldest hospital in North America. Founded in 1541 by Cortez. Nearby is the church where Cortez was first buried. Cortez left a bequest for the maintenance of this hospital, which was, up until very recently, observed by his descendants. Not only was it the first hospital founded in North America, but it has been in continuous operation since that time. A plaque on the wall indicates that a human anatomy was performed there in 1643.
2. The Church of the Virgin of Guadalupe. This is of great interest as an example of faith healing. Votives are sold and placed at the altar and in one of the chapels the walls are decorated with illustrative

case histories, all of which reminds one of what the temples of Aesculapius must have been like.

3. Jefferson, Georgia. The monument to Crawford W. Long and the office building where he gave ether for surgical purposes in 1842. Nearby the monument to Paul Eve in Augusta, Ga. Dr. Eve, first fired by liberal sentiment, went to Poland to help the Poles in their fight for independence and afterwards was the Surgeon-General of the armies of Georgia during the Civil War.
4. The home of Valentine Mott in Gramercy Park, N. Y.
5. The Pennsylvania Hospital—the oldest hospital in the United States of America.
6. The Massachusetts General Hospital.
7. The statue to Horace Wells in Hartford, Connecticut.
8. The blue grass region of Kentucky—Bardstown—My Old Kentucky Home—Transylvania College—the Ephraim McDowell home as at present restored.

A plea was made for the continued restoration and preservation of medical memorials in the United States and also for the importance of the accumulation at the present time of data of local medical interest in the various states. Each constituent branch of the Association should accumulate, while there is still time, material on the history of medicine in its own locality.

ANNOUNCEMENTS

American Association of the History of Medicine

The *Seventeenth Annual Meeting* of the Association will be held in Atlantic City on May 4-6 [See *Bulletin*, 1940, Vol. VIII, p. 1399]. The program is not yet filled and six more papers can be accepted if they are announced to the president, Dr. Esmond R. Long, Henry Phipps Institute, 7th and Lombard Sts., Philadelphia, Pa. before *March 15*, 1941.

The Association regrets to announce the sudden death of its member Dr. Kate Campbell Hurd Mead. She died at the age of 73 on January 1, 1941, of a heart attack while hurrying up a steep hill to summon help for her caretaker, who also had just been stricken by the same ailment and who also died. In 1938 Dr. Mead published the first volume of her magnum opus *A History of Women in Medicine, From the Earliest Times to the Beginning of the Nineteenth Century* (The Haddam Press, Haddam, Conn.). The manuscript for two more volumes is ready for print, and it is to be hoped that this will be published in the near future.

Constituent Societies

The *Society of Medical History of Chicago* was elected a Constituent Society of the Association. The Society was organized in November 1909. Its career as Dr. James B. Herrick says, has been marked by periods of comparative inactivity, for example during the World War, but it has carried on during the thirty-one years of its existence according to the purpose stated in Article I, Section 2 of its Constitution, which reads as follows: "The purpose of the Society shall be to secure and preserve matters pertaining to the history of medical institutions, organizations and individuals particularly of Chicago and the adjacent country: and to stimulate interest in medical history in general."

Meetings have been and still are held at irregular intervals. Papers have been presented by local men or by invited guests. Howard Kelly of Baltimore was the speaker at the first meeting held February 19, 1910. Among other guest speakers may be mentioned Man-

chester Brown, James M. Ball, John D. Comrie, LeRoy Crummer, Fielding H. Garrison, Arnold Klebs, John E. Lane, Jesse S. Myer, William Snow Miller, H. E. Sigerist and A. S. Warthin. Of Chicago members whose contributions may be noted—the names are limited to those not now living—are Frank Billings, James H. Breasted, Isaac N. Danforth, Clarence A. Earle, Mortimer Frank, William A. Pusey, William E. Quine, Otto L. Schmidt, George H. Simmons.

A noteworthy feature of the Society's work has been its collection of material, especially that that has to do with the medical history of Chicago and the northwest—early college catalogues, diplomas, photographs, files of medical journals, etc. The cooperation of the Chicago Historical Society and of the John Crerar Library has been helpful in attaining this end. The long services of Dr. George H. Weaver who for thirteen years was the faithful secretary of the Society should be especially mentioned.

The *Bulletin of the Society of Medical History of Chicago* has been published for several years. The last number of Volume V appeared in May 1940.

The present membership is about 180. The officers today are: President, Dr. Ernest E. Irons; Vice-President, Dr. J. P. Symonds; Secretary-Treasurer, Dr. George H. Coleman; Editor, Dr. Morris Fishbein.

The *College of Physicians of Philadelphia, Section on Medical History* held its Annual Students' Meeting on December 9, 1940. The subject was: *Philadelphia Hospital Units with the A. E. F., Their History, Organization, and Activities*, with the following speakers:

Dr. C. F. Mitchell, *Pennsylvania Hospital, Base No. 10.*
Dr. Alexander Randall, *University Hospital, Base No 20.*
Dr. Clifford B. Lull, *Jefferson Hospital, Base No. 38.*

National News

History of Science Society

The Society held two meetings in New York on December 27 and

30, 1940, in connection with the 55th Annual Meeting of the American Historical Association. The following papers were presented:

Early French Scientific Expeditions to America
J. W. Olmstead

The Literature on the History of Mathematics in the United States
Louis Karpinski

Doctors, Drugs, and Dentists in Pioneer Iowa
William J. Petersen

The Council met in New York on December 27, 1940. Professor Richard H. Shryock was elected president for 1941-1942.

The Society cooperated with Section L of the American Association for the Advancement of Science in organizing a Symposium on *A Scientific Basis for Ethics* which was held in Philadelphia on December 31, 1940.

Society of American Bacteriologists

The Society of American Bacteriologists at its meeting in St. Louis, Mo., held a round table on December 27, 1940, which featured the history of bacteriology in and around St. Louis. With the distinguished pioneer, Dr. Amand Ravold, presiding the following program was presented:

1. Pre-Bacteriological Era.
   Joseph Grindon, Sr., M. D., Professor of Dermatology, St. Louis University Medical School. Member of the first bacteriology class at the Shaw School of Botany, Washington University, 1888.
2. Beginnings of Bacteriology in St. Louis.
   William Trelease, Ph. D., Professor Emeritus of Botany, University of Illinois. First teacher of bacteriology in St. Louis, 1888. (Dr. Trelease was unable to attend, and his paper was read.)
3. Organization of the First Class in Bacteriology for Physicians, given at the Henry Shaw School of Botany, Washington University, 1888.
   Amand Ravold, M. D., Professor of Bacteriology, Washington University, 1890 to 1902.
4. Sanitary History of St. Louis, 1893 to 1933.
   Max C. Starkloff, M. D., Health Commissioner of the City of St. Louis, 1893 to 1933.

5. History of Bacteriology in St. Louis from 1902 to 1940.
Downey L. Harris, M. D., Director, Anti-Rabies Clinic of St. Louis Health Department, and former City Bacteriologist.

The participants in the program were the men who did much to shape the course of progress for half a century or more; and they vividly outlined the cultural and especially the sanitary history of this vigorous and growing mid-western city. Dr. Ravold is making use of the material presented for the compilation of a history of bacteriology in St. Louis.

At its next meeting in Baltimore in 1941, the Society of American Bacteriologists expects to present a similar program dealing with the bacteriological history of Maryland.

BARNETT COHEN,
Archivist.

Carnegie Institution of Washington

On January 7, 1941, George Sarton delivered a lecture on the subject: ***What is the meaning of mediaeval science to the modern scientist?***

Hippocratic Celebration at the University of California Medical School, San Francisco

On Friday afternoon, December 5, 1940, the San Francisco Greek colony united with the University of California Medical School in celebrating the 2400 anniversary of the reputed birth of Hippocrates. The occasion was arranged by Dr. Pan S. Codellas, Lecturer on the History of Medicine, and by Dr. John B. DeC. M. Saunders, Professor of Anatomy and head of the Division of the History of Medicine.

At this occasion, a plaster replica of the British Museum marble bust referred to Hippocrates, was presented to the University of California Medical School by the San Francisco Greek colony. Dean Emeritus Langley Porter, accepted the bust on behalf of the University, and presided at the meeting.

Dr. Codellas discussed the evidence for setting the birth of Hippocrates in the spring of the first year of the 80 Olympiad, or 460 B. C. Dr. W. J. Kerr discussed the significance of the Hippocratic example in modern medicine. Dr. Chauncey D. Leake, Professor of

FIG. 1. BIRTHDAY PILGRIMAGE TO BEAUMONT'S GRAVE.

In the foreground from left to right: Drs. F. J. V. Krebs, W. C. G. Kirchner, Alphonse McMahon, H. S. Langsdorf; Mr. W. J. Grolton; Rev. A. M. Schwitalla, S. J.; Drs. R. E. Schlueter, A. H. Jones, J. E. Peden, L. S. Luton, and Solon Cameron

Pharmacology, apostrophized the influence of Hippocrates in inaugurating idealism and freedom in western medicine. At the conclusion of the remarks, the audience moved in Greek procession behind the bust of Hippocrates from Toland Hall, where the ceremonies were held, to the Crummer Room for the History of Medicine, where tea was served, and where an extensive exhibit ot manuscript and library material relating to Hippocrates was displayed.

Duke University, Durham, N. C.

The students of the School of Medicine organized in the spring of 1940 a *Medical History Club* which has had a very vigorous and enthusiastic existence.

Wayne University, Detroit, Mich.

Dr. Arno B. Luckhardt, of the University of Chicago, gave an address on *Dr. William Beaumont and the Medical Epic of the Northwestern Territory* at the Student-Faculty Banquet of the College of Medicine on December 11, 1940.

Birthday Pilgrimage to Beaumont's Grave

The St. Louis Medical Society's Annual Pilgrimage to William Beaumont's grave was held on Thanksgiving Day, November 21, 1940, at 11 a. m. Dr. Robert E. Schlueter opened the exercises. Rev. Alphonse M. Schwitalla, S. J. gave the principal address and wreaths were deposited by Mayor Bernard F. Dickmann, Dr. Alphonse McMahon for the Southern Medical Association, Dr. Cyrus E. Burford for the Missouri State Medical Association, and Dr. Herbert S. Langsdorf for the St. Louis Medical Society. (Fig. 1.)

Chicago

Members of the staff of Michael Reese Hospital in Chicago have organized a Medical History Society named after Dr. Robert Sonnenschein. The Society held its first meeting on December 11, 1940.